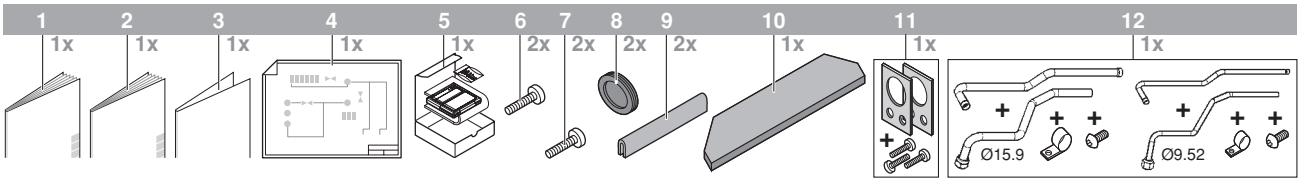
DAIKIN

# INSTALLATION MANUAL

## Indoor unit for air to water heat pump system

**EKHBRD011AAV1**
**EKHBRD014AAV1**
**EKHBRD016AAV1**

**EKHBRD011AAY1**
**EKHBRD014AAY1**
**EKHBRD016AAY1**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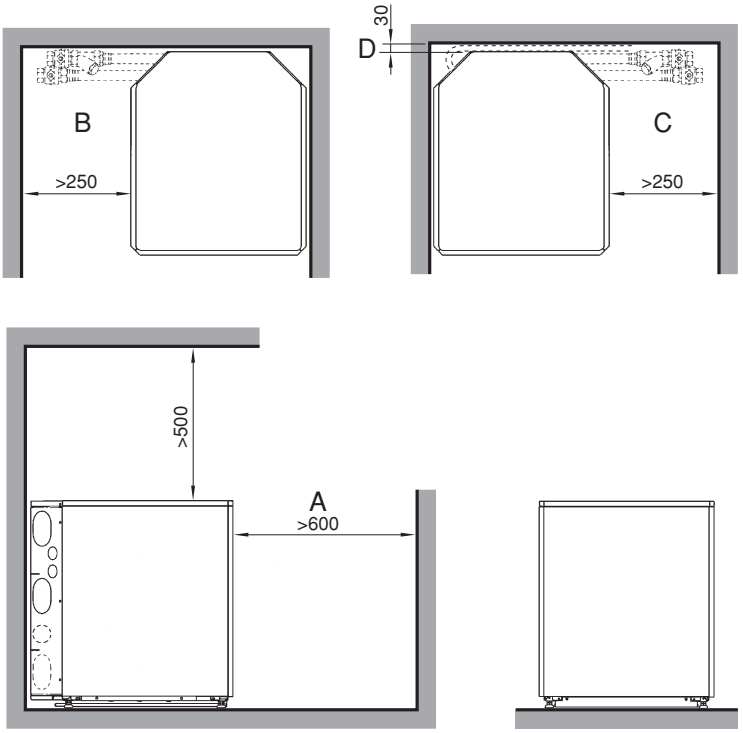
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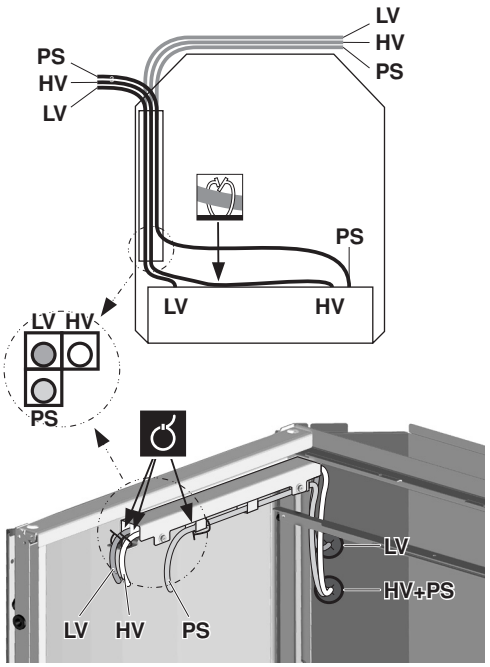
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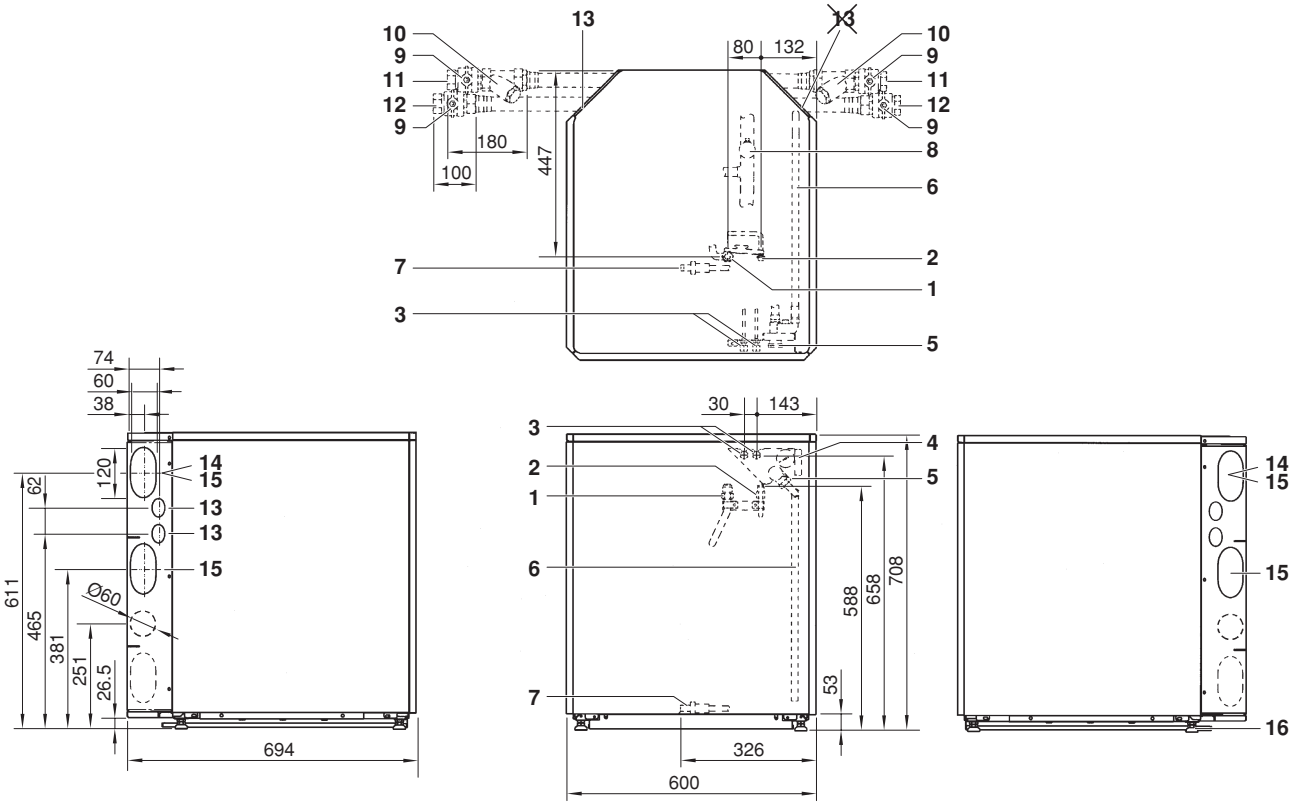
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**CE - DECLARATION-OF-CONFORMITY**
**CE - KONFORMITÄTSERKLÄRUNG**
**CE - DECLARATION-DE-CONFORMITE**
**CE - CONFORMITEITSVERKLARING**

**CE - DECLARACION-DE-CONFORMIDAD**
**CE - DICHIARAZIONE-DI-CONFORMITA**
**CE - ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ**

**CE - DECLARAÇÃO-DE-CONFORMIDADE**
**CE - ЗАЯВЛЕНИЕ-О-СООТВЕТСТВИИ**
**CE - OPFYLDELSESERKLÆRING**
**CE - FÖRSÄKRAN-OM-ÖVERENSTÄMMELSE**

**CE - ERKLÆRING OM-SAMSVAR**
**CE - ILMOITUS-YHDENMUKAISUUDESTA**
**CE - PROHLÁŠENÍ-O-SHODĚ**

**CE - IZJAVA-O-USKLAĐENOSTI**
**CE - MEGFELELŐSÉGI-NYILATKOZAT**
**CE - DEKLARACJA-ZGODNOŚCI**
**CE - DECLARAŢIE-DE-CONFORMITATE**

**CE - IZJAVA O SKLADNOSTI**
**CE - VASTAVUSDEKLARATSIOON**
**CE - ДЕКЛАРАЦИЯ-ЗА-СЪОТВЕТСТВИЕ**

**CE - ATITIKTIES-DEKLARACIJA**
**CE - ATBILSTĪBAS-DEKLARĀCIJA**
**CE - VYHLÁSENIE-ZHODY**
**CE - UYUMLULUK-BİLDİRİSİ**

## Daikin Europe N.V.

**01** (GB) declares under its sole responsibility that the equipment to which this declaration relates:
**02** (D) erklärt auf seine alleinige Verantwortung, dass die Ausrüstung für die diese Erklärung bestimmt ist:
**03** (F) déclare sous sa seule responsabilité que l'équipement visé par la présente déclaration:
**04** (NL) verklaart hierbij op eigen exclusieve verantwoordelijkheid dat de apparatuur waarop deze verklaring betrekking heeft:
**05** (E) declara bajo su única responsabilidad que el equipo al que hace referencia la declaración:
**06** (I) dichiara sotto la propria responsabilità che gli apparecchi a cui è riferita questa dichiarazione:
**07** (GR) δηλώνει με αποκλειστική της ευθύνη ότι ο εξοπλισμός στον οποίο αναφέρεται η παρούσα δήλωση:
**08** (P) declara sob sua exclusiva responsabilidade que os equipamentos a que esta declaração se refere:
**09** (RUS) заявляет, исключительно под свою ответственность, что оборудование, к которому относится настоящее заявление:
**10** (DK) erklærer som eneansvarlig, at udstyret, som er omfattet af denne erklæring:
**11** (S) deklarerar i egenskap av huvudansvarig, att utrustningen som berörs av denna deklaration innebär att:
**12** (N) erklærer et fullstendig ansvar for at det utstyr som berøres av denne deklarasjon, innebærer at:
**13** (FIN) ilmoittaa yksinomaan omalla vastuullaan, että tämän ilmoituksen tarkoittamat laitteet:
**14** (CZ) prohlašuje ve své plné odpovědnosti, že zařízení, k němuž se toto prohlášení vztahuje:
**15** (HR) izjavljuje pod isključivo vlastitom odgovornošću da oprema na koju se ova izjava odnosi:
**16** (H) teljes felelősségе tudatában kijelenti, hogy a berendezések, melyekre e nyilatkozat vonatkozik:
**17** (PL) deklaruje na własną wyłączną odpowiedzialność, że urządzenia, których ta deklaracja dotyczy:
**18** (RO) declară pe proprie răspundere că echipamentele la care se referă această declaraţie:
**19** (SLO) z vso odgovornostjo izjavlja, da je oprema naprav, na katero se izjava nanaša:
**20** (EST) kinnitab oma täielikul vastutusel, et käesoleva deklaratsiooni alla kuuluv varustus:
**21** (BG) декларира на своя отговорност, че оборудването, за което се отнася тази декларация:
**22** (LT) visiška savo atsakomybe skelbia, kad įranga, kuriai taikoma ši deklaracija:
**23** (LV) ar pilnu atbildību apliecina, ka tālāk aprakstītās iekārtas, uz kurām attiecas šī deklarācija:
**24** (SK) vyhlasuje na vlastnú zodpovednosť, že zariadenie, na ktoré sa vzťahuje toto vyhlásenie:
**25** (TR) tamamen kendi sorumluluğunda olmak üzere bu bildirinin ilgili olduğu donanımının aşağıdaki gibi olduğunu beyan eder:

**EKHBRD011AAV1*, EKHBRD014AAV1*, EKHBRD016AAV1*,**
**EKHBRD011AAY1*, EKHBRD014AAY1*, EKHBRD016AAY1*,**
* = , , -, 1, 2, 3, ..., 9

**01** are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions:
**02** der/den folgenden Norm(en) oder einem anderen Normdokument oder -dokumenten entspricht/entsprechen, unter der Voraussetzung, daß sie gemäß unseren Anweisungen eingesetzt werden:
**03** sont conformes à la/aux norme(s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:
**04** conform de volgende norm(en) of één of meer andere bindende documenten zijn, op voorwaarde dat ze worden gebruikt overeenkomstig onze instructies:
**05** están en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativo(s), siempre que sean utilizados de acuerdo con nuestras instrucciones:
**06** sono conformi al(i) seguente(i) standard(s) o altro(i) documento(i) a carattere normativo, a patto che vengano usati in conformità alle nostre istruzioni:
**07** είναι σύμφωνα με το(α) ακόλουθο(α) πρότυπο(α) ή άλλο έγγραφο(α) κανονισμών, υπό την προϋπόθεση ότι χρησιμοποιούνται σύμφωνα με τις οδηγίες μας:
**08** estão em conformidade com a(s) seguinte(s) norma(s) ou outro(s) documento(s) normativo(s), desde que estes sejam utilizados de acordo com as nossas instruções:
**09** соответствуют следующим стандартам или другим нормативным документам, при условии их использования согласно нашим инструкциям:
**10** overholder følgende standard(er) eller andet/andre retningsgivende dokument(er), forudsat at disse anvendes i henhold til vore instrukser:
**11** respektive utrustning är utförd i överensstämmelse med och följer följande standard(er) eller andra normgivande dokument, under förutsättning att användning sker i överensstämmelse med våra instruktioner:
**12** respektive utstyr er i overensstemmelse med følgende standard(er) eller andre normgivende dokument(er), under forutssetning av at disse brukes i henhold til våre instrukser:
**13** vastaavat seuraavien standardien ja muiden ohjeellisten dokumenttien vaatimuksia edellyttäen, että niitä käytetään ohjeidemme mukaisesti:
**14** za předpokladu, že jsou využívány v souladu s našimi pokyny, odpovídají následujícím normám nebo normativním dokumentům:
**15** u skladu sa slijedećim standardom(ima) ili drugim normativnim dokumentom(ima), uz uvjet da se oni koriste u skladu s našim uputama:
**16** megfelelnek az alábbi szabvány(ok)nak vagy egyéb irányadó dokumentum(ok)nak, ha azokat előírás szerint használják:
**17** spełniają wymogi następujących norm i innych dokumentów normalizacyjnych, pod warunkiem że używane są zgodnie z naszymi instrukcjami:
**18** sunt în conformitate cu următorul (următoarele) standard(e) sau alt(e) document(e) normativ(e), cu condiţia ca acestea să fie utilizate în conformitate cu instrucţiunile noastre
**19** skladni z naslednjimi standardi in drugimi normativi, pod pogojem, da se uporabljajo v skladu z našimi navodili:
**20** on vastavuses järgmis(t)e standardi(te)ga või teiste normatiivsete dokumentidega, kui neid kasutatakse vastavalt meie juhenditele:
**21** съответстват на следните стандарти или други нормативни документи, при условие, че се използват съгласно нашите инструкции:
**22** atitinka žemiau nurodytus standartus ir (arba) kitus norminius dokumentus su sąlyga, kad yra naudojami pagal mūsų nurodymus:
**23** tad, ja lietoti atbilstoši ražotāja norādījumiem, atbilst sekojošiem standartiem un citiem normatīviem dokumentiem:
**24** sú v zhode s nasledovnou(ými) normou(ami) alebo iným(i) normatívnym(i) dokumentom(ami), za predpokladu, že sa používajú v súlade s našim návodom:
**25** ürünün, talimatlarımıza göre kullanılması koşuluyla aşağıdaki standartlar ve norm belirten belgelerle uyumludur:

EN60335-2-40

**01** following the provisions of:
**02** gemäß den Vorschriften der:
**03** conformément aux stipulations des:
**04** overeenkomstig de bepalingen van:
**05** siguiendo las disposiciones de:
**06** secondo le prescrizioni per:
**07** με τήρηση των διατάξεων των:
**08** de acordo com o previsto em:
**09** в соответствии с положениями:
**10** under iagttagelse af bestemmelserne i:
**11** enligt villkoren i:
**12** gitt i henhold til bestemmelsene i:
**13** noudattaen määräyksiä:
**14** za dodržení ustanovení předpisu:
**15** prema odredbama:
**16** követi a(z):
**17** zgodnie z postanowieniami Dyrektyw:
**18** în urma prevederilor:
**19** ob upoštevanju določb:
**20** vastavalt nõuetele:
**21** следвайки клаузите на:
**22** laikantis nuostatų, pateikiamų:
**23** ievērojot prasības, kas noteiktas:
**24** održiavajúc ustanovenia:
**25** bunun koşullanna uygun olarak:

Low Voltage 2006/95/EC
Machinery 98/37/EC (till 29/12/2009)
Electromagnetic Compatibility 2004/108/EC *

**01** Directives, as amended.
**02** Direktiven, gemäß Änderung.
**03** Directives, telles que modifiées.
**04** Richtlijnen, zoals geamendeerd.
**05** Directivas, según lo enmendado.
**06** Direttive, come da modifica.
**07** Οδηγιών, όπως έχουν τροποποιηθεί.
**08** Directivas, conforme alteração em.
**09** Директив со всеми поправками.
**10** Direktiver, med senere ændringer.
**11** Direktiv, med företagna ändringar.
**12** Direktiver, med foretatte endringer.
**13** Direktiivejä, sellaisina kuin ne ovat muutettuina.
**14** v platném znění.
**15** Smjernice, kako je izmijenjeno.
**16** irányelv(ek) és módosításaik rendelkezéseit.
**17** z późniejszymi poprawkami.
**18** Directivelor, cu amendamentele respective.
**19** Direktive z vsemi spremembami.
**20** Direktiivid koos muudatustega.
**21** Директиви, с техните изменения.
**22** Direktyvose su papildymais.
**23** Direktīvās un to papildinājumos.
**24** Smernice, v platnom znení.
**25** Değiştirilmiş halleriyle Yönetmelikler.

**01** **Note** * as set out in **<A>** and judged positively by **<B>** according to the **Certificate <C>**.
**02** **Hinweis** * wie in der **<A>** aufgeführt und von **<B>** positiv beurteilt gemäß **Zertifikat <C>**.
**03** **Remarque** * tel que défini dans **<A>** et évalué positivement par **<B>** conformément au **Certificat <C>**.
**04** **Bemerk** * zoals vermeld in **<A>** en positief beoordeeld door **<B>** overeenkomstig **Certificaat <C>**.
**05** **Nota** * como se establece en **<A>** y es valorado positivamente por **<B>** de acuerdo con el **Certificado <C>**.
**06** **Nota** * delineato nel **<A>** e giudicato positivamente da **<B>** secondo il **Certificato <C>**.
**07** **Σημείωση** * όπως καθορίζεται στο **<A>** και κρίνεται θετικά από το **<B>** σύμφωνα με το **Πιστοποιητικό <C>**.
**08** **Nota** * tal como estabelecido em **<A>** e com o parecer positivo de **<B>** de acordo com o **Certificado <C>**.
**09** **Примечание** * как указано в **<A>** и в соответствии с положительным решением **<B>** согласно **Свидетельству <C>**.
**10** **Bemærk** * som anført i **<A>** og positivt vurderet af **<B>** i henhold til **Certifikat <C>**.
**11** **Information** * enligt **<A>** och godkänts av **<B>** enligt **Certifikatet <C>**.
**12** **Merk** * som det fremkommer i **<A>** og gjennom positiv bedømmelse av **<B>** ifølge **Sertifikat <C>**.
**13** **Huom** * jotka on esitetty asiakirjassa **<A>** ja jotka **<B>** on hyväksynyt **Sertifikaatin <C>** mukaisesti.
**14** **Poznámka** * jak bylo uvedeno v **<A>** a pozitivně zjištěno **<B>** v souladu s **osvědčením <C>**.
**15** **Napomena** * kako je izloženo u **<A>** i pozitivno ocijenjeno od strane **<B>** prema **Certifikatu <C>**.
**16** **Megjegyzés** * a(z) **<A>** alapján, a(z) **<B>** igazolta a megfelelést, a(z) **<C>** **tanúsítvány** szerint.
**17** **Uwaga** * zgodnie z dokumentacją **<A>**, pozytywną opinią **<B>** i **Świadectwem <C>**.
**18** **Notă** * aşa cum este stabilit în **<A>** şi apreciat pozitiv de **<B>** în conformitate cu **Certificatul <C>**.
**19** **Opomba** * kot je določeno v **<A>** in odobreno s strani **<B>** v skladu s **certifikatom <C>**.
**20** **Märkus** * nagu on näidatud dokumendis **<A>** ja heaks kiidetud **<B>** järgi vastavalt **sertifikaadile <C>**.
**21** **Забележка** * както е изложено в **<A>** и оценено положително от **<B>** съгласно **Сертификата <C>**.
**22** **Pastaba** * kaip nustatyta **<A>** ir kaip teigiamai nuspręsta **<B>** pagal **Sertifikatą <C>**.
**23** **Piezīmes** * kā norādīts **<A>** un atbilstoši **<B>** pozitīvajam vērtējumam saskaņā ar **sertifikātu <C>**.
**24** **Poznámka** * ako bolo uvedené v **<A>** a pozitívne zistené **<B>** v súlade s **osvedčením <C>**.
**25** **Not** * **<A>**'da belirtildiği gibi ve **<C>** **Sertifikasına** göre **<B>** tarafından olumlu olarak değerlendirildiği gibi.

| | |
|---|---|
| **<A>** | **DAIKIN.TCF.025C17/04-2009** |
| **<B>** | **KEMA (NB0344)** |
| **<C>** | **2082543.0551-QUA/EMC** |

3PW40544-6E

Jiro Tomita
Director Quality Assurance
Ostend, 2nd of June 2009

**DAIKIN EUROPE N.V.**
Zandvoordestraat 300, B-8400 Oostende, Belgium

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READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. BE SURE ONLY TO USE ACCESSORIES MADE BY DAIKIN WHICH ARE SPECIFICALLY DESIGNED FOR USE WITH THE EQUIPMENT AND HAVE THEM INSTALLED BY A PROFESSIONAL.

ALL ACTIVITIES DESCRIBED IN THIS MANUAL SHALL BE CARRIED OUT BY A LICENSED TECHNICIAN.

BE SURE TO WEAR ADEQUATE PERSONEL PROTECTION EQUIPMENT (PROTECTION GLOVES, SAFETY GLASSES, ...) WHEN PERFORMING INSTALLATION, MAINTENANCE OR SERVICE TO THE UNIT.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DAIKIN DEALER FOR ADVICE AND INFORMATION.

THE UNIT DESCRIBED IN THIS MANUAL IS DESIGNED FOR INDOOR INSTALLATION ONLY AND FOR AMBIENT TEMPERATURES RANGING 5°C~35°C.

The English text is the original instruction. Other languages are translations of the original instructions.

# INTRODUCTION

## General information

Thank you for purchasing this Daikin indoor unit.

The unit is the indoor part of the air to water ERSQ or ERRQ heat pump. The unit is designed for floor standing indoor installation and used for heating applications. The unit can be combined with space heating radiators (field supply) and with an EKHTS* domestic hot water tank (option).

A remote controller with room thermostat functionality is standard supplied with this unit to control your installation.

**NOTE** An EKHBRD indoor unit can only be connected to an outdoor ERSQ or ERRQ-unit.

**Domestic hot water tank (option)**

An optional EKHTS* domestic hot water tank can be connected to the indoor unit. The domestic hot water tank is available in two different water capacities: 200 and 260 litre.

Refer to the domestic hot water tank installation manual for further details.

**Remote controller (option)**

An optional secondary EKRUAHTA remote controller (with room thermostat functionality) can be connected to the indoor unit. Purpose is to provide the possibility to install the standard remote controller near the unit (for service reasons), and install another remote controller in another place (e.g. living room) to operate your installation.

Refer to the "Installation of the remote controller" on page 15 for further details.

**Room thermostat (option)**

An optional room thermostat EKRTR or EKRTW can be connected to the indoor unit.

Refer to the room thermostat installation manual for further details.

If this option is installed it is not possible to use the remote controller thermostat function.

**Digital I/O PCB (option)**

An optional EKRP1HBA digital I/O PCB can be connected to the indoor unit and be used to remotely monitor your system. This address card offers 3 voltage free outputs.

Refer to the operation manual of the indoor unit and to the digital I/O PCB installation manual for more information.

Refer to the wiring diagram or connection diagram for connecting this PCB to the unit.

**Demand PCB (option)**

An optional EKRP1AHTA demand PCB can be connected to the indoor unit. This PCB is needed when the Daikin room thermostat EKRTR or EKRTW is installed or when multiple set point control is used, and provides the communication with the indoor unit.

Refer to the demand PCB installation manual for further details.

Refer to the wiring diagram or connection diagram for connecting this PCB to the unit.

## Scope of this manual

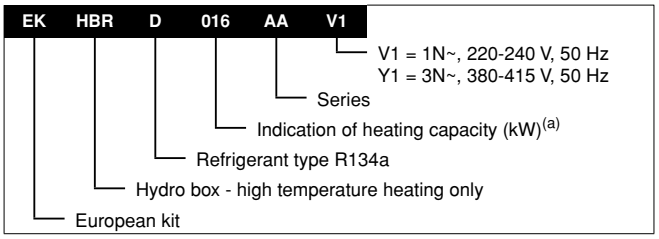
This installation manual describes the procedures for handling, installing and connecting all EKHBRD indoor unit models.

**NOTE** Installation of the ERSQ or ERRQ heat pump outdoor is described in the outdoor unit installation manual.

Operation of the indoor unit is described in the indoor unit operation manual.

## Model identification

**Indoor unit**


EK HBR D 016 AA V1
V1 = 1N~, 220-240 V, 50 Hz
Y1 = 3N~, 380-415 V, 50 Hz
Series
Indication of heating capacity (kW)(a)
Refrigerant type R134a
Hydro box - high temperature heating only
European kit

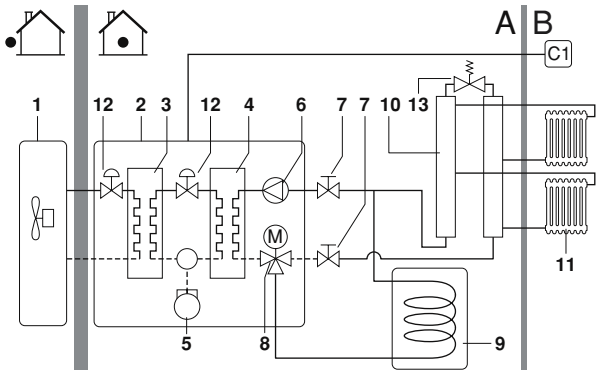
(a) For exact values, refer to "Unit specifications" on page 34.

## Typical application examples

The application examples given below are for illustration purposes only.

### Application 1

*Space heating and domestic hot water heating with a single remote controller installed in the living room.*

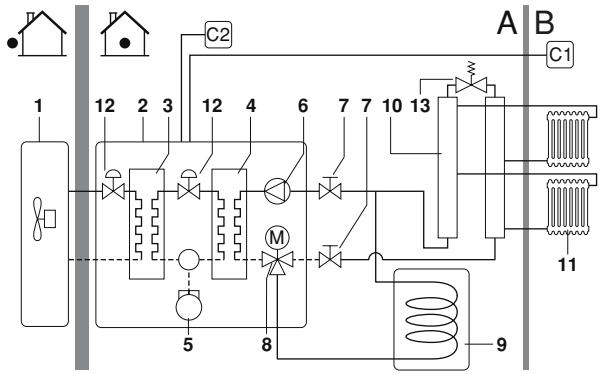



| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **10** | Collector (field supply) |
| **2** | Indoor unit | **11** | Radiator (field supply) |
| **3** | Refrigerant heat exchanger | **12** | Electronic expansion valve |
| **4** | Water heat exchanger | | |
| **5** | Compressor | **13** | By-pass valve (field supply) |
| **6** | Pump | | |
| **7** | Shut-off valve | **C1** | Remote controller |
| **8** | Motorized 3-way valve (optional) | **A** | Installation place |
| | | **B** | Living room |
| **9** | Domestic hot water tank (optional) | | |

The remote controller gives immediate feedback to the indoor unit and by doing so it matches in a smart way the unit performance to the demanded space heating requirements. In this way there is no frequent start/stop of the unit or there are no too big temperature fluctuations in the to be heated rooms. This remote controller has also a smart logic functionality which controls the combined space heating and domestic hot water demand (e.g. if room temperature drops more than 3°C during domestic hot water operation, the unit will automatically switch back to space heating). There is no remote controller near the unit. During service maintenance an additional remote controller can be connected by a service person.

## Application 2

*Space heating and domestic hot water heating with one remote controller installed with the unit, and another remote controller installed in the living room.*




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **10** | Collector (field supply) |
| **2** | Indoor unit | **11** | Radiator (field supply) |
| **3** | Refrigerant heat exchanger | **12** | Electronic expansion valve |
| **4** | Water heat exchanger | **13** | By-pass valve (field supply) |
| **5** | Compressor | **C1** | Remote controller (master) |
| **6** | Pump | **C2** | Optional remote controller (slave) |
| **7** | Shut-off valve | | |
| **8** | Motorized 3-way valve (optional) | **A** | Installation place |
| | | **B** | Living room |
| **9** | Domestic hot water tank (optional) | | |

The remote controller gives immediate feedback to the indoor unit and by doing so it matches in a smart way the unit performance to the demanded space heating requirements. In this way there is no frequent start/stop of the unit or there are no too big temperature fluctuations in the to be heated rooms. This remote controller has also a smart logic functionality which controls the combined space heating and domestic hot water demand (e.g. if room temperature drops more than 3°C during domestic hot water operation, the unit will automatically switch back to space heating). The main remote controller (C1) is installed in the living room and can access all settings (master). The second remote controller (C2) can not access schedule and parameter settings (slave).

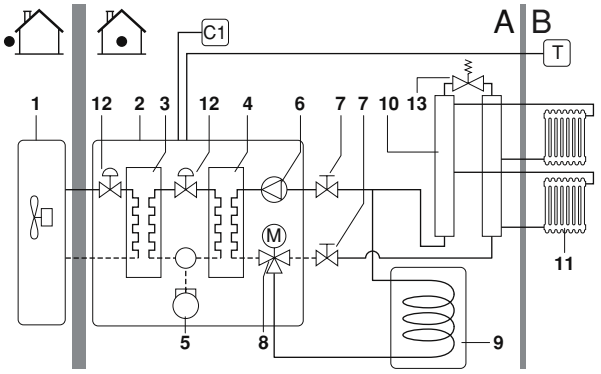
| | Master | Slave |
|---|---|---|
| Operation ON/OFF | Operable | Operable |
| Domestic water heating operation ON/OFF | Operable | Operable |
| Setting the leaving water temperature | Operable | Operable |
| Setting the room temperature | Operable | Operable |
| Quiet mode ON/OFF | Operable | Operable |
| Weather dependent set point operation ON/OFF | Operable | Operable |
| Setting the clock | Operable | Operable |
| Programming the schedule timer | Operable | — |
| Schedule timer operation ON/OFF | Operable | — |
| Field settings | Operable | — |
| Error code display | Operable | Operable |
| Test operation | Operable | Operable |
| Room thermostat functionality | Operable | — |

Refer to the chapter "Electrical wiring work" on page 13 about connecting the master and slave remote controller.

## Application 3

*Space heating and domestic hot water heating with a single remote controller installed with the unit, and the external room thermostat installed in the living room.*

Optionally the Daikin room thermostat EKRTR or EKRTW can be connected to the Daikin system. Daikin can not guarantee neither good operation nor reliability of the system if another thermostat is used. For those reasons Daikin can not give warranty of the system in such case.




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **10** | Collector (field supply) |
| **2** | Indoor unit | **11** | Radiator (field supply) |
| **3** | Refrigerant heat exchanger | **12** | Electronic expansion valve |
| **4** | Water heat exchanger | **13** | By-pass valve (field supply) |
| **5** | Compressor | **C1** | Remote controller |
| **6** | Pump | **T** | Room thermostat |
| **7** | Shut-off valve | **A** | Installation place |
| **8** | Motorized 3-way valve (optional) | **B** | Living room |
| **9** | Domestic hot water tank (optional) | | |

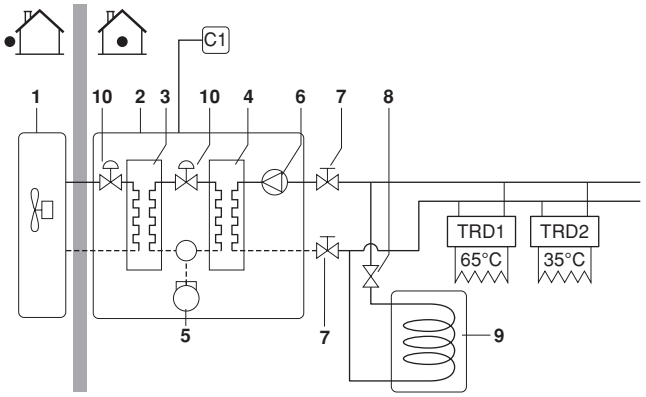
There is only a room thermostat on/off control. There is no smart logic functionality for space heating. The domestic hot water operation is performed according to the minimum and maximum timer operation.

## Application 4

*Space heating provided through floor heating loops. For floor heating applications in combination with radiators the water temperature delivered by the Daikin system is too high. For this reason a temperature reducing device (field supply) is required to lower the water temperature (the hot water will be mixed with cold water to lower the temperature). The control of this field supplied feature is not done by the heat pump system. The operation and configuration of the field water circuit is the responsibility of the installer. Daikin only offers the possibility to have multiple set points on request.*

### Pattern A

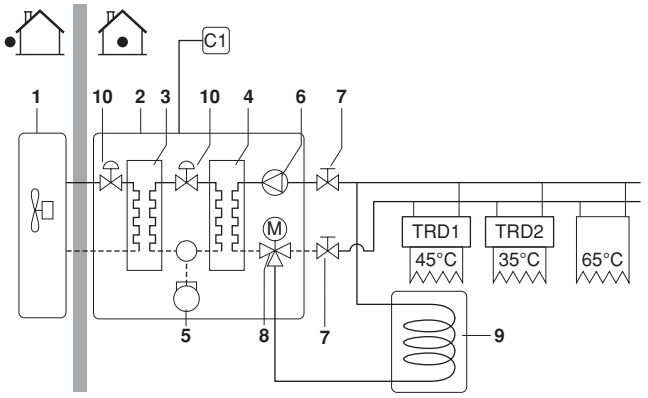
The domestic hot water tank is installed in parallel with the mixing station(s). This allows operating the unit in space heating and domestic water heating simultaneously. The balancing of the water distribution is in this case the responsibility of the installer.




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **9** | Domestic hot water tank (optional) |
| **2** | Indoor unit | | |
| **3** | Refrigerant heat exchanger | **10** | Electronic expansion valve |
| **4** | Water heat exchanger | | |
| **5** | Compressor | **C1** | Remote controller |
| **6** | Pump | TRD**1** | Temperature reducing device 1 |
| **7** | Shut-off valve | | |
| **8** | Valve (field supply) | TRD**2** | Temperature reducing device 2 |

### Pattern B

The domestic hot water tank is installed in a separate circuit (with a 3-way valve) of the temperature reducing device(s). This configuration does not allow simultaneous domestic hot water and space heating operation.




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **9** | Domestic hot water tank (optional) |
| **2** | Indoor unit | | |
| **3** | Refrigerant heat exchanger | **10** | Electronic expansion valve |
| **4** | Water heat exchanger | | |
| **5** | Compressor | **C1** | Remote controller |
| **6** | Pump | TRD**1** | Temperature reducing device 1 |
| **7** | Shut-off valve | | |
| **8** | Motorized 3-way valve (optional) | TRD**2** | Temperature reducing device 2 |

Refer to the chapter "Multiple set point control" on page 26 for more information about the configuration of your system.

## Application 5

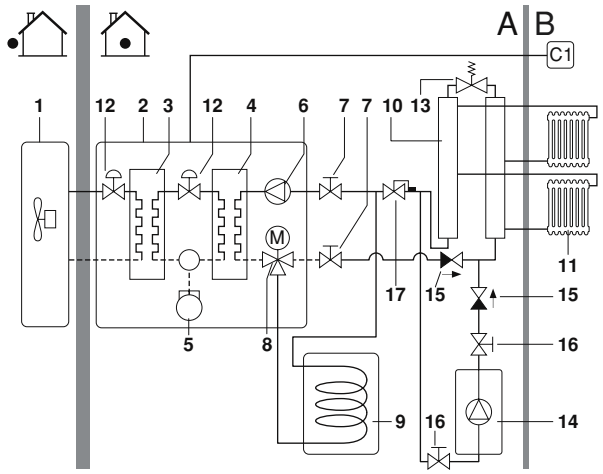
Space heating with an auxiliary boiler (alternating operation)

*Space heating application by either the Daikin indoor unit or by an auxiliary boiler connected in the system. An auxiliary contact decides whether either the EKHBRD* indoor unit or the boiler will operate. This auxiliary contact can e.g. be an outdoor temperature thermostat, an electricity tariff contact, a manually operated contact, etc.*

Bivalent operation is only possible for space heating operation, **not** for the domestic hot water heating operation. Domestic hot water in such an application is always provided by the domestic hot water tank which is connected to the Daikin indoor unit.

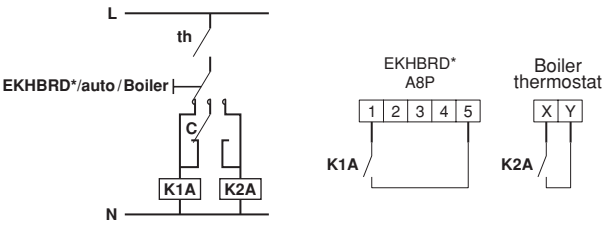
The auxiliary boiler must be integrated in the piping work and in the field wiring according to the illustrations below.

- Be sure that the boiler and the integration of the boiler in the system is in accordance with relevant European and national regulations.
- Daikin can not be put responsible for incorrect or unsafe situations in the boiler system.




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **12** | Electronic expansion valve |
| **2** | Indoor unit | | |
| **3** | Refrigerant heat exchanger | **13** | By-pass valve (field supply) |
| **4** | Water heat exchanger | **14** | Boiler (field supply) |
| **5** | Compressor | **15** | Non-return valve (field supply) |
| **6** | Pump | | |
| **7** | Shut-off valve | **16** | Shut-off valve (field supply) |
| **8** | Motorised 3-way valve (field supply) | **17** | Aquastat valve (field supply) |
| **9** | Domestic hot water tank | **C1** | Remote controller |
| **10** | Collector (field supply) | **A** | Installation place |
| **11** | Radiator (field supply) | **B** | Living room |

### Field wiring




| | |
|---|---|
| **Boiler thermostat** | Boiler thermostat |
| **C** | Auxiliary contact (normal closed) |
| **th** | Heating only room thermostat |
| **K1A** | Auxiliary relay for activation of EKHBRD* unit (field supply) |
| **K2A** | Auxiliary relay for activation of boiler (field supply) |

### Operation

When the room thermostat (th) closes, either the EKHBRD* unit or the boiler starts operating, depending on the position of the auxiliary contact (C).

**NOTE**

- Make sure that auxiliary contact (C) has sufficient differential or time delay so as to avoid frequent changeover between the EKHBRD* unit and the boiler. If the auxiliary contact (C) is an outdoor temperature thermostat, make sure to install the thermostat in the shade, so that it is not influenced or turned ON/OFF by the sun.

  Frequent switching may cause corrosion of the boiler in an early stage. Contact the manufacturer of the boiler.
- During heating operation of the EKHBRD* unit, the unit will operate so as to achieve the target leaving water temperature as set on the user interface. When weather dependent operation is active, the water temperature is determined automatically depending on the outdoor temperature.

  During heating operation of the boiler, the boiler will operate so as to achieve the target leaving water temperature as set on the boiler controller.

  Never set the target leaving water temperature set point on the boiler controller above 80°C.

Make sure that return water to the EKHBRD* heat exchanger never exceeds 80°C.

For this reason, never put the target leaving water temperature set point on the boiler controller above 80°C and install an aquastat[(a)] valve in the return water flow of the EKHBRD* unit.

Make sure that the non-return valves (field supply) are correctly installed in the system.

Make sure that the room thermostat (th) is not frequently turned ON/OFF.

Daikin shall not be held liable for any damage resulting from failure to observe this rule.

(a) The aquastat valve must be set for 80°C and must operate to close the return water flow to the unit when the measured temperature exceeds 80°C. When the temperature drops to a lower level, the aquastat valve must operate to open the return water flow to the EKHBRD* unit again.

# Accessories

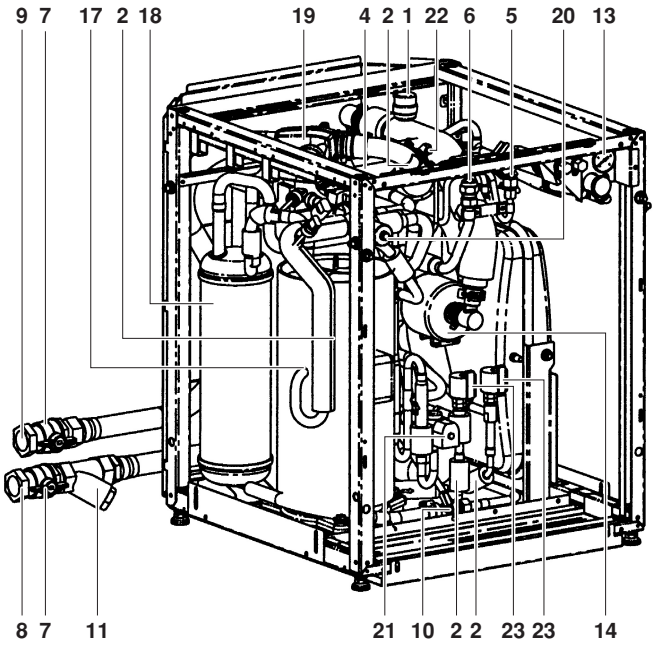
## Accessories supplied with this unit

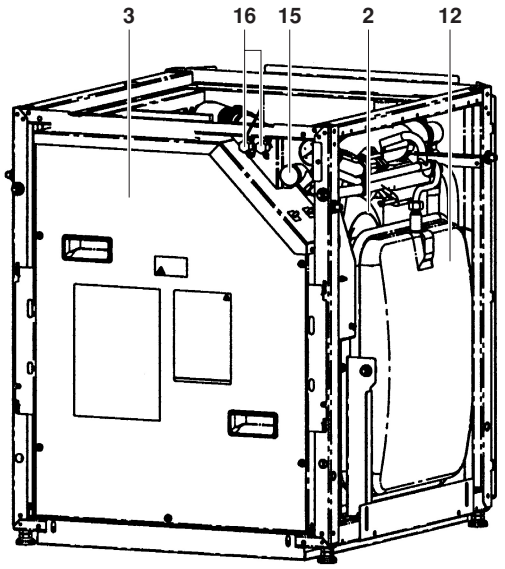
(See figure 1)

| | |
|---|---|
| 1 | Installation manual |
| 2 | Operation manual |
| 3 | Unpacking instruction sheet |
| 4 | Wiring diagram |
| 5 | User interface kit (remote controller, 4 fixing screws, 2 plugs) |
| 6 | Top plate fixing screws |
| 7 | Sound bottom plate fixing screws |
| 8 | Grommet (small) |
| 9 | Grommet (large) |
| 10 | Top plate insulation |
| 11 | Kit for lifting the unit (2 plates, 3 screws) |
| 12 | Refrigerant piping connections kit (4 piping parts, 2 screws, 2 clamps) |

# Overview of the indoor unit

## Main components

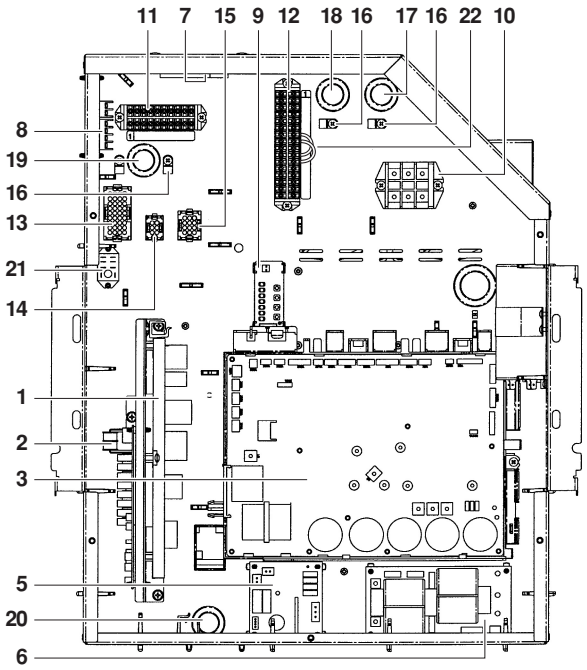


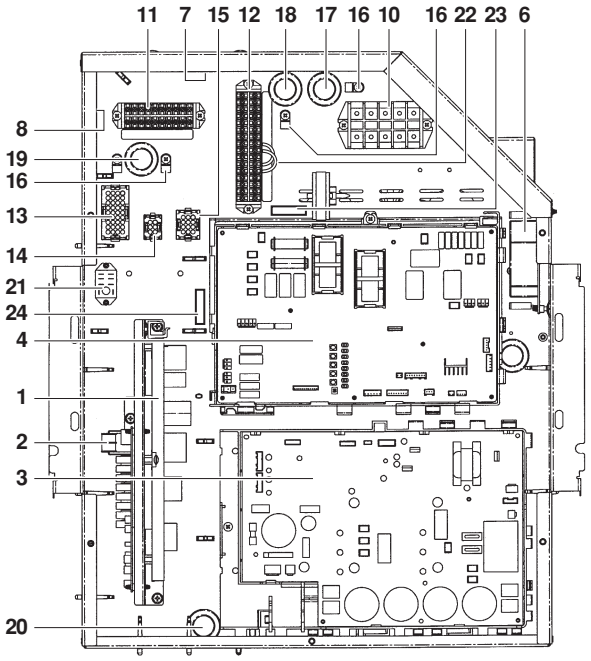

1. Air purge valve
   Remaining air in the water circuit will be automatically removed via the air purge valve.
2. Temperature sensors (thermistors)
   Temperature sensors determine the water and refrigerant temperature at various points in the circuit.
3. Switch box
   The switch box contains the main electronic and electrical parts of the indoor unit.
4. Heat exchangers
5. Refrigerant liquid connection R410A
6. Refrigerant gas connection R410A
7. Shut-off valves
   The shut-off valves on the water inlet connection and water outlet connection allow isolation of the indoor unit water circuit side from the residential water circuit side. This facilitates draining and filter replacement of the indoor unit.
8. Water inlet connection
9. Water outlet connection
10. Drain valve
11. Water filter
    The water filter removes dirt from the water to prevent damage to the pump or blockage of the evaporator. The water filter must be cleaned on a regular base. See "Maintenance activities" on page 31.
12. Expansion vessel (12 l)
    The drain valve of the expansion vessel allows draining the remaining water in the expansion vessel after draining with the drain valve.
13. Manometer
    The manometer allows readout of the water pressure in the water circuit.
14. Pump
    The pump circulates the water in the water circuit.
15. Pressure relief valve
    The pressure relief valve prevents excessive water pressure in the water circuit by opening at 3 bar and discharging some water.
16. Service ports R134a
17. Compressor
18. Accumulator
19. 3-way valve
    The motorized 3-way valve controls whether the water outlet is used for space heating or the domestic hot water tank.
20. 4-way valve
21. 2-way valve
22. Thermal cut-out
23. Electronic expansion valve

## Switch box main components

**V1 unit types (1-phase)**




**Y1 unit types (3-phase)**




**1.** Main PCB
The main PCB (Printed Circuit Board) controls the functioning of the unit.

**2.** Control PCB

**3.** Inverter PCB

**4.** Inverter control PCB (only Y1)

**5.** QA PCB (only V1)

**6.** Filter PCB

**7.** Digital I/O PCB (optional)

**8.** Demand PCB (optional)

**9.** Service PCB (only V1)

**10.** Terminal block X1M
Main terminal block which allows easy connection of field wiring for power supply.

**11.** Terminal block X3M
Field wiring terminal block for DC connections.

**12.** Terminal block X2M
Field wiring terminal block for AC connections.

**13.** DC connector X1Y

**14.** Pump connector X2Y

**15.** AC connector X3Y

**16.** Cable tie mountings
The cable tie mountings allow to fix the field wiring with cable ties to the switch box to ensure strain relief.

**17.** Power wiring entry

**18.** AC field wiring entry

**19.** DC field wiring entry

**20.** Compressor cable entry

**21.** Interface relay K1A

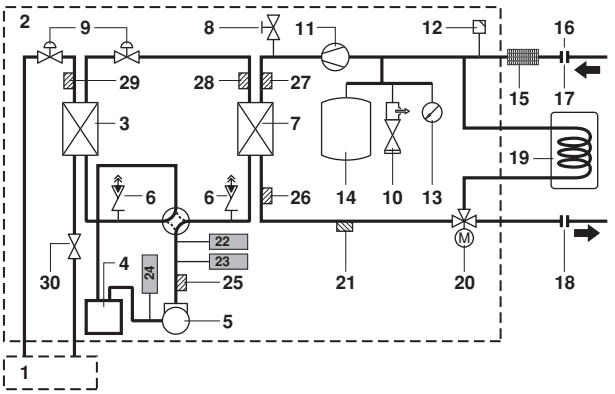
**22.** Wiring bridges

**23.** Fuse F1 (only Y1)

**24.** Fuse F2 (only Y1)

**NOTE** The electrical connection diagram can be found on the inside of the switch box cover.

## Functional diagram




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **16** | Fill valve (field supply) |
| **2** | Indoor unit | **17** | Shut-off valve water inlet |
| **3** | Refrigerant-refrigerant heat exchanger | **18** | Shut-off valve water outlet |
| | | **19** | Domestic hot water tank (optional) |
| **4** | Accumulator | | |
| **5** | Compressor | **20** | Motorized 3-way valve (optional) |
| **6** | Service port | | |
| **7** | Refrigerant-water heat exchanger | **21** | Thermal cut-out (Q2L) |
| | | **22** | High pressure switch (S1PH) |
| **8** | Drain valve | **23** | High pressure sensor (B1PH) |
| **9** | Electronic expansion valve | **24** | Low pressure sensor (B1PL) |
| | | **25** | Discharge thermistor (R6T) |
| **10** | Pressure relief valve | **26** | Leaving water thermistor (R5T) |
| **11** | Pump | **27** | Returning water thermistor (R4T) |
| **12** | Air purge valve | | |
| **13** | Manometer | **28** | Liquid thermistor R134a (R7T) |
| **14** | Expansion vessel | **29** | Liquid thermistor R410A (R3T) |
| **15** | Water filter | **30** | 2-way valve |

# INSTALLATION OF THE INDOOR UNIT

## Selecting an installation location

NOTE

- Make sure to provide for adequate measures in order to prevent that the indoor unit should be used as a shelter by small animals.
- Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.

The unit is to be placed in an indoor location that meets the following requirements:

- The installation location is frost-free.
- The space around the unit is adequate for servicing. (See figure 2).
- The space around the unit allows for sufficient air circulation.
- There is a provision for pressure relief valve blow-off.
- There is no danger of fire due to leakage of inflammable gas.
- The equipment is not intended for use in a potentially explosive atmosphere.
- All piping lengths and distances have been taken into consideration.

| Requirement | Value |
|---|---|
| Maximum allowable refrigerant piping length between outdoor unit and indoor unit | 50 m |
| Minimum required refrigerant piping length between outdoor unit and indoor unit | 3 m |
| Maximum allowable height difference between outdoor unit and indoor unit | 30 m |
| Maximum allowable distance between the domestic hot water tank and the indoor unit (only for installations with domestic hot water tank). | 10 m |

NOTE

If the installation is equipped with a domestic hot water tank (optional), please refer to the domestic hot water tank installation manual.

- Do not install the unit in places often used as workplace.
  In case of construction works (e.g. grinding works) where a lot of dust is created, the unit must be covered.
- Do not install the unit in places with high humidity (e.g. bathroom) (maximum humidity (RH) = 85%).
- If the sound is measured under actual installation conditions, the measured value will be higher than the sound pressure level mentioned in the "Unit specifications" on page 34 due to environmental noise and sound reflections. Choose the installation location carefully and do not install in a sound sensitive environment (e.g. living room, bedroom, ...).
- Take care that in the event of a water leak, water can not cause any damage to the installation space and surroundings.
- The foundation must be strong enough to support the weight of the unit (or unit and optional domestic hot water tank completely filled with water in case the optional domestic hot water tank is mounted on top of the unit).

  The floor is flat to prevent vibrations and noise generation and to have sufficient stability especially when the optional domestic hot water tank is mounted on top of the unit.
- Do not place any objects or equipment on top of the unit (top plate).
- Do not climb, sit or stand on top of the unit.
- Be sure that sufficient precautions are taken, in accordance with relevant local and national regulations, in case of refrigerant leakage.

## Dimensions and service space

Unit of measurement: mm

Dimensions of the unit, see figure 4

| | | | |
|---|---|---|---|
| **1** | Gas pipe connection | **10** | Water filter |
| **2** | Liquid pipe connection | **11** | Water inlet connection |
| **3** | Service port | **12** | Water outlet connection |
| **4** | Manometer | **13** | Electrical wiring knock out holes |
| **5** | Pressure relief valve | | |
| **6** | Flexible hose blow off valve | **14** | Refrigerant piping knock out holes |
| **7** | Drain valve water circuit | **15** | Water piping knock out holes |
| **8** | Air purge valve | | |
| **9** | Shut-off valve | **16** | Levelling feet |

Required service space, see figure 2

| | |
|---|---|
| **A** | Space required for switch box removal |
| **B** | Left installation (top view) |
| **C** | Right installation (top view) |
| **D** | Space required for wiring (in case of right installation) |

## Inspecting and handling the unit

- At delivery, the unit must be checked and any damage must be reported immediately to the carrier claims agent.
- Bring the unit as close as possible to its final installation position in its original package in order to prevent damage during transport.
- Unpack the indoor unit completely according to the instructions mentioned on the unpacking instructions sheet.
- Check if all indoor unit accessories (see "Accessories" on page 6) are enclosed.

## Installing the indoor unit

NOTE

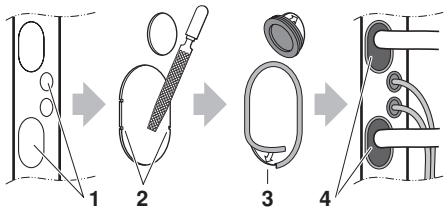
For installation of the outdoor unit, refer to the installation manual of the outdoor unit.

- For connecting piping and electrical cables, knockout holes are provided at the back of the unit.

  - Knockout holes are foreseen at both sides of the unit. Pay attention to knock out the correct holes depending on your installation location.
  - Refrigerant piping and water piping must go through different knockout holes.
  - The electrical wiring must always enter the unit through the knockout holes at the left side of the unit (see figure 4).

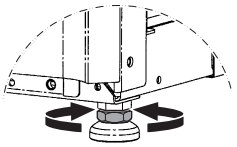
  - To punch a knockout hole, hit on it with a hammer.
  - When passing electrical wiring or piping through the knockout holes, remove any burrs from the knockout holes.

- Install the grommets (accessories) around the knockout holes to prevent damage.

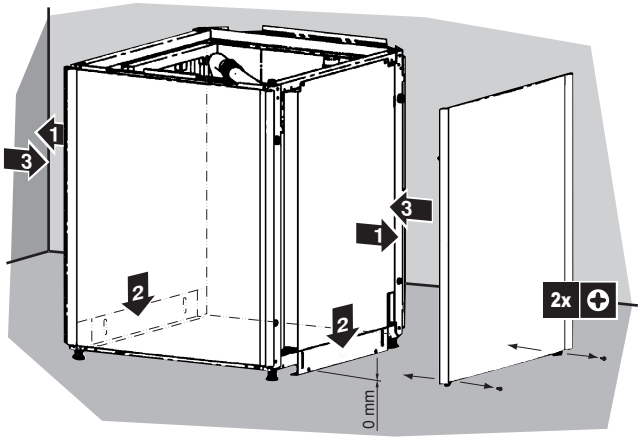



| | | | |
|---|---|---|---|
| 1 | Knockout hole | 3 | Grommet |
| 2 | Burr | 4 | Putty or insulation materials (field supply) |

- Level the unit to a stable position using the levelling feet.



- Close the sound panel(s) and decoration panel(s) which will be on the wall side and for which fixation is not possible anymore after the unit is put on its final location.
- Fix the sound bottom strips on both sides of the unit with the appropriate screws.




- Standard installation location of the optional domestic hot water tank is on top of the indoor unit.

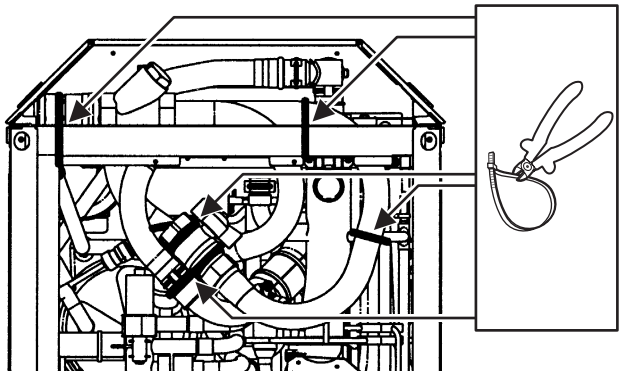
  If available service space to left and/or right side is limited, carefully consider all tank module installation steps first.

- Place the unit in the appropriate installation location.

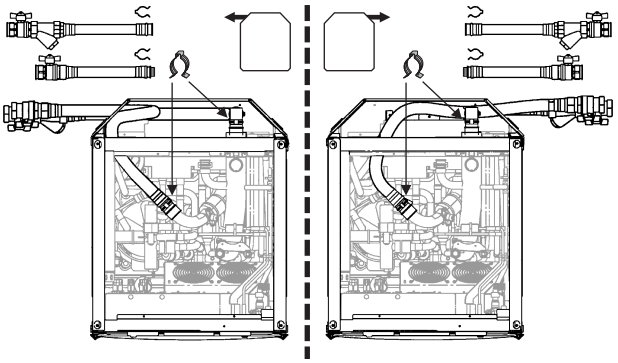
The weight of the unit is approximately 145 kg. At least two persons are required to lift the unit.

Use the plates delivered with the unti to lift the unt

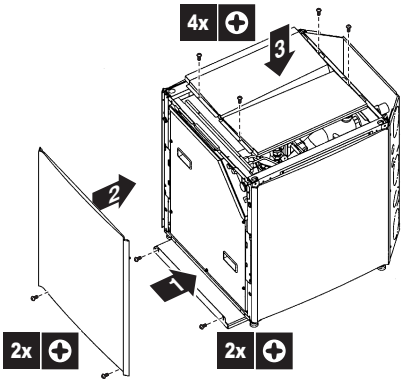
- Cut the tie wraps to release the flexible pipes.



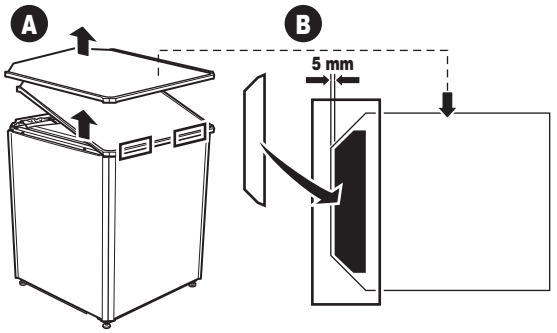
- Put the flexible pipes through the knockout holes.



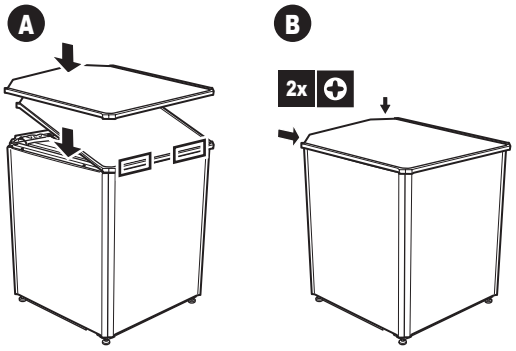
- Perform the piping work as described in the chapter "Piping connection work" on page 10.
- Fill the system with water as described in the chapter "Charging water" on page 12.
- Perform the electrical wiring work as described in the chapter "Electrical wiring work" on page 13.
- To make the casing completely sealed, plug the knockout holes with putty or insulation materials (to be prepared on-site).
- Perform the pre-operation checks as described in the chapter "Start-up and configuration" on page 17.
- Close the unit
  - Put the sound bottom plate at the bottom of the unit and fix it with the appropriate screws.
  - Fix the front and remaining side decoration panel(s) back to the unit using the appropriate screws.
  - Fix the top panel on the unit with the appropriate screws.




- Stick the top plate insulation (accessory) at the inside of the top decoration panel according to the figure below.



- Fix the top decoration panel on top of the unit using the appropriate screws. In case a domestic hot water tank (optional) is installed, refer to the domestic hot water tank installation manual.




# PIPING CONNECTION WORK

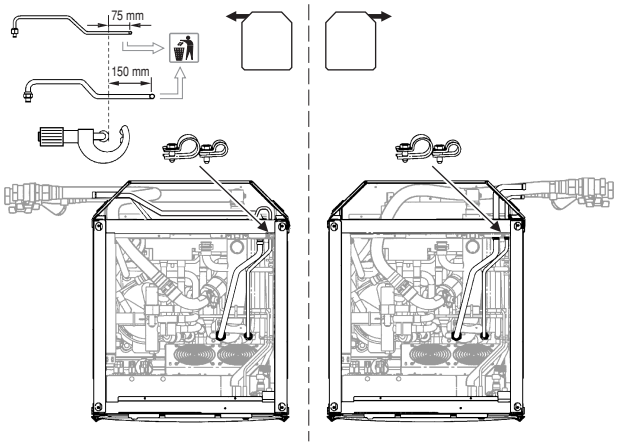
## Refrigerant piping work

For all guidelines, instructions and specifications regarding refrigerant piping work between the indoor unit and the outdoor unit, please refer to the outdoor unit installation manual.

4 refrigerant pipes are delivered with the unit to make the refrigerant connections inside the unit. Refer to the instructions mentioned on the top plate of the unit.

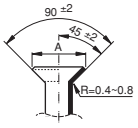
- In case of right connection, only 2 pipes are required.
- In case of left connection, the 4 pipes are required.

Do not braze the piping connections inside the unit.



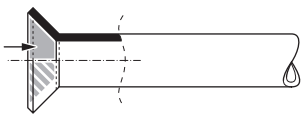

### Guidelines for flare connection

- Flares should not be re-used. New ones should be made in order to prevent leaks.
- Use a pipe cutter and flare tool suitable for the refrigerant used.
- Only use the annealed flare nuts included with the unit. Using different flare nuts may cause the refrigerant to leak.
- Please refer to the table for flaring dimensions and tightening torques (too much tightening will result in splitting the flare).

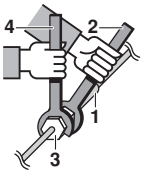
| Piping size (mm) | Tightening torque (N•m) | Flare dimensions A (mm) | Flare shape (mm) |
|---|---|---|---|
| Ø9.5 | 33~39 | 12.8~13.2 |  |
| Ø15.9 | 63~75 | 19.4~19.7 | |



- When connecting the flare nut, coat the flare inner surface with ether oil or ester oil and initially tighten 3 or 4 turns by hand before tightening firmly.



- When loosening a flare nut, always use two wrenches together. When connecting the piping, always use a spanner and torque wrench together to tighten the flare nut to prevent flare nut cracking and leaks.




| | |
|---|---|
| **1** | Piping union |
| **2** | Spanner |
| **3** | Flare nut |
| **4** | Torque wrench |

**Not recommended, but in case of emergency**
Should you be forced to connect the piping without a torque wrench, follow the following installation method:

- Tighten the flare nut using a spanner until the tightening torque suddenly increases.
- From that position further tighten the flare nut the angle listed below:

| Piping size (mm) | Further tightening angle (degrees) | Recommended arm length of spanner (mm) |
|---|---|---|
| Ø9.5 | 60~90 | ±200 |
| Ø15.9 | 30~60 | ±300 |

## Water piping work

### Checking the water circuit

The units are equipped with a water inlet and water outlet for connection to a water circuit. This circuit must be provided by a licensed technician and must comply with all relevant European and national regulations.

The unit is only to be used in a closed water system. Application in an open water circuit can lead to excessive corrosion of the water piping.

Before continuing the installation of the unit, check the following points:

- The maximum water pressure is 4 bar.
- The maximum water temperature is 85°C.
- Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance.
  One drain valve in the indoor unit, and a drain valve on the expansion vessel are provided to drain the water from the indoor unit water system.
- Make sure to provide a proper drain for the pressure relief valve to avoid any water coming into contact with electrical parts.
- Air vents must be provided at all high points of the system. The vents should be located at points which are easily accessible for servicing. An automatic air purge is provided inside the indoor unit. Check that this air purge valve is not tightened too much so that automatic release of air in the water circuit remains possible.
- Take care that the components installed in the field piping can withstand the water pressure and temperature.
- Always use materials which are compatible with the water used in the system and with the materials used on the indoor unit.

## Checking the water volume and expansion vessel pre-pressure

The unit is equipped with an expansion vessel of 12 litre which has a default pre-pressure of 1 bar.

To assure proper operation of the unit, the pre-pressure of the expansion vessel might need to be adjusted and the minimum and maximum water volume must be checked.

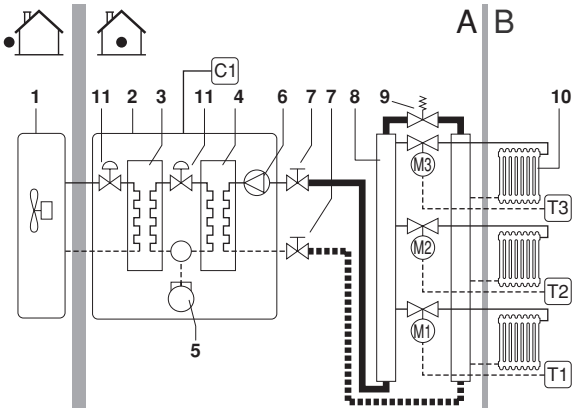
**1** Check that the total water volume in the installation, excluding the internal water volume of the unit, is 20 l minimum.

In most applications this minimum water volume will have a satisfying result.

In critical processes or in rooms with a high heat load though, extra water volume might be required.

When circulation in each space heating/radiator loop is controlled by remotely controlled valves, it is important that this minimum water volume is kept even if all the valves are closed.

**Example**




| | | | |
|---|---|---|---|
| **1** | Outdoor unit | **10** | Radiator (field supply) |
| **2** | Indoor unit | **11** | Electronic expansion valve |
| **3** | Refrigerant heat exchanger | **C1** | Remote controller |
| **4** | Water heat exchanger | **M1...M3** | Individual motorized valve to control loop radiators (field supply) |
| **5** | Compressor | | |
| **6** | Pump | **T1...T3** | Individual room thermostat (field supply) |
| **7** | Shut-off valve | | |
| **8** | Collector (field supply) | **A** | Installation space |
| **9** | By-pass valve (field supply) | **B** | Living room |

**2** Using the table below, determine if the expansion vessel pre-pressure requires adjustment.

**3** Using the table and instructions below, determine if the total water volume in the installation is below the maximum allowed water volume.

| Installation height difference[a] | Water volume | |
|---|---|---|
| | 65°C ≤270 l<br>80°C ≤180 l | 65°C >270 l<br>80°C >180 l |
| ≤7 m | No pre-pressure adjustment required. | Actions required:<br>• pre-pressure must be decreased, calculate according to "Calculating the pre-pressure of the expansion vessel"<br>• check if the water volume is lower than maximum allowed water volume (use graph below) |
| >7 m | Actions required:<br>• pre-pressure must be increased, calculate according to "Calculating the pre-pressure of the expansion vessel"<br>• check if the water volume is lower than maximum allowed water volume (use graph below) | Expansion vessel of the unit too small for the installation. |

(a) Installation height difference: height difference (m) between the highest point of the water circuit and the indoor unit. If the indoor unit is located at the highest point of the installation, the installation height is considered 0 m.

### Calculating the pre-pressure of the expansion vessel

The pre-pressure (Pg) to be set depends on the maximum installation height difference (H) and is calculated as below:

Pg=(H/10+0.3) bar

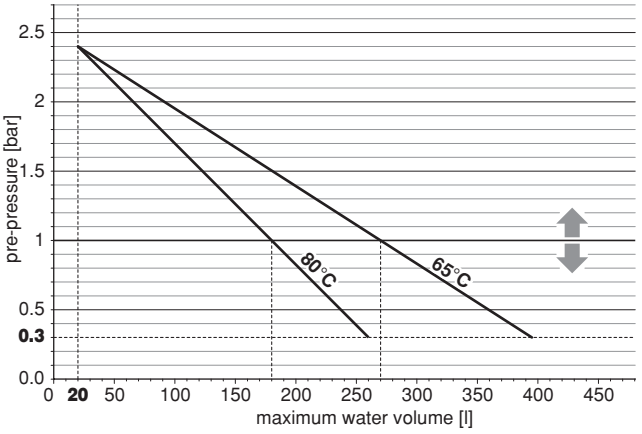
### Checking the maximum allowed water volume

To determine the maximum allowed water volume in the entire circuit, proceed as follows:

**1** Determine for the calculated pre-pressure (Pg) the corresponding maximum water volume using the graph below.

**2** Check that the total water volume in the entire water circuit is lower than this value.

If this is not the case, the expansion vessel inside the indoor unit is too small for the installation.




| | | |
|---|---|---|
| pre-pressure | = | pre-pressure |
| maximum water volume | = | maximum water volume |
| ↑ | = | increase pre-pressure vessel volume |
| ↓ | = | decrease pre-pressure vessel volume |

### Example 1

The indoor unit is installed 5 m below the highest point in the water circuit. The total water volume in the water circuit is 100 l.

In this example, no action or adjustment is required.

### Example 2

The indoor unit is installed at the highest point in the water circuit. The total water volume in the water circuit is 380 l.

Result:

- Since 380 l is higher than 180 l or 270 l, the pre-pressure must be decreased (see table above).
- The required pre-pressure is:
  Pg=(H/10+0.3) bar=(0/10+0.3) bar=0.3 bar
- The corresponding maximum water volume can be read from the graph: approximately 380 l for leaving water of 65°C and approximately 250 l for leaving water of 80°C.
- In case of 65°C leaving water, since the total water volume (380 l) is not higher than the maximum water volume (380 l), the expansion vessel suffices for the installation.
  In case of 80°C leaving water, because the total water volume (380 l) is higher than the maximum water volume (250 l) of the expansion vessel, an additional expansion vessel must be installed.

### Setting the pre-pressure of the expansion vessel

When it is required to change the default pre-pressure of the expansion vessel (1 bar), keep in mind the following guidelines:

- Use only dry nitrogen to set the expansion vessel pre-pressure.
- Inappropriate setting of the expansion vessel pre-pressure will lead to malfunction of the system. Therefore, the pre-pressure should only be adjusted by a licensed installer.

To be able setting the pre-pressure of the expansion vessel, the switch box needs to be removed from the unit. How this must be done is explained in the chapter "Opening the unit" on page 31.

### Connecting the water circuit

Water connections must be made. The location of the water inlet connection and the water outlet connection on the indoor unit is shown in the chapter "Main components" on page 6.

Be careful not to deform the unit piping by using excessive force when connecting the piping. Deformation of the piping can cause the unit to malfunction.

If air, moisture or dust gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

- Use clean pipes only.
- Hold the pipe end downwards when removing burrs.
- Cover the pipe end when inserting it through a wall so that no dust and dirt enter.
- Use a good thread sealant for the sealing of the connections.
- When using non-brass metallic piping, make sure to insulate both materials from each other to prevent galvanic corrosion.
- Because brass is a soft material, use appropriate tooling for connecting the water circuit. Inappropriate tooling will cause damage to the pipes.

- The unit is only to be used in a closed water system. Application in an open water circuit can lead to excessive corrosion of the water piping.
- Never use Zn-coated parts in the water circuit. Excessive corrosion of these parts may occur as copper piping is used in the unit's internal water circuit.

**NOTE** When using a 3-way valve or a 2-way valve in the water circuit, the maximum changeover time of the valve shall be less than 60 seconds.

### Precautions when connecting field piping and regarding insulation

The complete water circuit, inclusive all piping, must be insulated to prevent reduction of the heating capacity.

If the indoor ambient temperature is higher than 30°C and the humidity is higher than RH 80% then the thickness of the insulation materials should be at least 20 mm in order to avoid condensation on the surface of the insulation.

## CHARGING WATER

### Method for adding water

1 Connect the water supply to a fill valve (field supply).

2 Make sure the automatic air purge valve is open (at least 2 turns).

3 Fill with water until the manometer indicates a pressure of approximately 2.0 bar. Remove air in the circuit as much as possible using the air purge valves.

**NOTE**

- During filling, it might not be possible to remove all air in the system. Remaining air will be removed through the automatic air purge valves during first operating hours of the system. Additional filling with water afterwards might be required.
- The water pressure indicated on the manometer will vary depending on the water temperature (higher pressure at higher water temperature). However, at all times water pressure should remain above 0.3 bar to avoid air entering the circuit.
- The unit might dispose some excessive water through the pressure relief valve.
- Water quality must be according to EU directive 98/83 EC.

## Precautions on electrical wiring work

**WARNING**

- A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with relevant local and national regulations.
- Switch off the power supply before making any connections.
- Use only copper wires.
- All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.
- Be sure to install the required fuses as mentioned on the electrical wiring diagram.
- The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.
- Never squeeze bundled cables and make sure that it does not come in contact with the piping and sharp edges.

  Make sure no external pressure is applied to the terminal connections.
- Be sure to use a dedicated power supply. Never use a power supply shared by another appliance.
- Be sure to establish an earth. Do not earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Be sure to install an earth leakage protector in accordance with relevant local and national regulations. Failure to do so may cause electrical shock.

  When installing the earth leakage protector make sure that it is compatible with the inverter (resistant to high frequency electrical noise) to avoid unnecessary opening of the earth leakage protector.
- As this unit is equipped with an inverter, installing a phase advancing capacitor not only will deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Be sure that after installation work all the rubber bushings are put back in place to protect the wires from touching sharp edges.

**For V1 models only**

- Equipment complying with EN/IEC 61000-3-12[(a)]
- This equipment complies with EN/IEC 61000-3-11[(b)] provided that the system impedance $Z_{sys}$ is less than or equal to $Z_{max}$ at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a system impedance $Z_{sys}$ less than or equal to $Z_{max}$. $Z_{max} = 0.32\ \Omega$

(a) European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase.

(b) European/International Technical Standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤75 A.

## Internal wiring - Parts table

Refer to the internal wiring diagram supplied with the unit. The abbreviations used are listed below.

### switch box components list

| | |
|---|---|
| A1P | Main PCB |
| A2P | Remote controller PCB (user interface) |
| A3P | Control PCB |
| A4P...* | Inverter PCB |
| A4P...# | Inverter control PCB |
| A5P...* | QA PCB |
| A5P...# | Inverter PCB |
| A6P | Filter PCB |
| A7P | Digital I/O PCB (optional) |
| A8P | Demand PCB (optional) |
| A9P...* | Service PCB |
| A10P | Thermostat PCB (optional) |
| A11P | Receiver PCB (optional) |
| B1PH | High pressure sensor |
| B1PL | Low pressure sensor |
| BS1~BS4 (A4P)..# | Push button |
| BS1~BS4 (A9P)...* | Push button |
| C1 ...* | Capacitor |
| C1,C2 ...# | Filter capacitor |
| C1,C2 (A5P) ...# | PCB capacitor |
| C1~C3 (A4P) ...* | PCB capacitor |
| C2,C3 ...* | Filter capacitor |
| DS1 (A*P) | Dipswitch |
| E7H | Bottom plate heater (only in combination with ERRQ* outdoor unit or ERSQ* outdoor unit with option EKBPHTH16A) |
| E1HC | Crankcase heater |
| F1,F2 ...# | Inline fuse |
| F1U (A1P,A3P) | Fuse (T, 3.15 A, 250 V) |
| F1U (A6P)...* | Fuse (T, 6.3 A, 250 V) |
| F1U,F2U (A4P)...# | Fuse (31.5 A, 500 V) |
| F1U,F2U (A7P) | Fuse (5 A, 250 V) (optional) |
| F3U,F4U ...* | Fuse (T, 6.3 A, 250 V) |
| F3U,F6U (A4P)...# | Fuse (6.3 A, 250 V) |
| H1P~H7P (A4P) .# | PCB LED |
| H1P~H7P (A9P) ..* | PCB LED |
| HAP (A*P) | PCB LED |
| IPM1 ...* | Integrated power module |
| K1A | Interface relay |
| K1E,K2E | Electronic expansion valve |
| K1M,K2M...# | PCB contactor |
| K*R (A*P) | PCB relay |
| K1S | 3-way valve (optional) |
| K2S | 2-way valve |
| M1C | Compressor |
| M1F,M2F | Switch box cooling fan |
| M1P | DC inverter pump |
| PC (A11P) | Power circuit (optional) |
| PHC1 | Optocoupler input circuit |
| PS (A*P) | Switching power supply |
| Q1DI,Q2DI | Earth leakage protector (field supply) |
| Q2L | Thermal protector water piping |
| R1 (A5P)...# | Resistance |
| R1,R2 (A4P) ...* | Resistance |
| R1L...* | Reactor |
| R1L~R3L ...# | Reactor |
| R1H (EKRTR) | Humidity sensor (optional) |
| R1T (EKRTW/R) | Ambient sensor (optional) |
| R2T (EKHTS*) | Domestic hot water tank thermistor (optional) |
| R2T (EKRTETS*) | External sensor (floor or ambient) (optional) |

R3T..... Liquid thermistor R410A
R4T..... Returning water thermistor
R5T..... Leaving water thermistor
R6T..... Discharge thermistor
R7T..... Liquid thermistor R134a
R8T..... Fin thermistor
RC (A*P)..... Receiver circuit
S1PH ..... High pressure switch
S1S..... Benefit kWh rate power supply contact (field supply)
S3S..... Mixing station input 1 (field supply)
S4S..... Mixing station input 2 (field supply)
SS1 (A1P)..... Selector switch (emergency)
SS1 (A2P)..... Selector switch (master/slave)
SS1 (A7P)..... Selector switch (optional)
TC (A*P) ..... Transmitter circuit
T1R,T2R (A*P) ..... Diode bridge
T3R.....* .... Power module
V1C~V8C .....* .... Ferrite core noise filter
V1C~V12C .....# .... Ferrite core noise filter
X1M~X3M..... Terminal block
X1Y~X4Y..... Connector
X*M (A*P) ..... Terminal block on PCB (optional)
Y1R..... 4-way valve
Z1F~Z5F (A*P) ..... Noise filter

* V1 models only
\# Y1 models only

## System overview of field wiring

- Most field wiring on the indoor unit side is to be made on the terminal block inside the switch box. To gain access to the terminal blocks, remove switch box service panel. Refer to the unit switch box cover for instructions how to remove this panel and gain access to the inside of the switch box.
- Cable tie mountings are provided at the wiring entries of the switch box. See "Switch box main components" on page 7.

NOTE

- The electrical connection diagram can be found on the inside of the switch box cover.
- Install the indoor and outdoor unit, power supply cable and communication cable(s) at least 1 meter away from televisions or radios to prevent image interference or noise.
  (Depending on the radio waves, a distance of 1 meter may not be sufficient to eliminate the noise.)

## Connection of the indoor unit power supply and communication cable(s)

### Cable requirements

| Item | Cable bundle | Description | Required number of conductors | | Maximum running current |
|---|---|---|---|---|---|
| **In case of normal kWh rate power supply installation** | | | **1~** | **3~** | |
| 1 | PS | Normal kWh rate power supply | 2+GND | 4+GND | (b) |
| **In case of benefit kWh rate power supply installation** | | | **1~** | **3~** | |
| 1 | PS | Normal kWh rate power supply | 2+GND | 2+GND | 1.25 |
| 2 | PS | Benefit kWh rate power supply | 2+GND | 4+GND | (b)–1.25 |
| 3 | LV | Outdoor unit communication (F1/F2) | 2 | 2 | (c) |
| 4 | LV | Standard remote controller (P1/P2) | 2 | 2 | (c) |
| 5 | LV | Secondary remote controller (P1/P2)(a) | 2 | 2 | (c) |
| 6 | LV | Domestic hot water tank thermistor (R2T)(a) | 2 | 2 | (d) |
| 7 | LV | External room thermostat signal ON/OFF(a) | 2 | 2 | 100 mA(c) |
| 8 | LV | Benefit kWh rate power supply switch (S1S)(a) | 2 | 2 | 100 mA(c) |
| 9 | LV | Multiple set point signal 1(a) | 2 | 2 | 100 mA(c) |
| 10 | LV | Multiple set point signal 1(a) | 2 | 2 | 100 mA(c) |
| 11 | HV | Bottom plate heater (E7H)(a) | 2 | 2 | 0.5 A(c) |
| 12 | HV | 3-way valve (K1S)(a) | 3 | 3 | (d) |
| 13 | HV | Digital I/O PCB outputs(a) | 2 | 2 | 300 mA(c) |
| 14 | HV | External room thermostat power supply(a) | 2 | 2 | 100 mA(c) |

PS = Power supply (see figure 3)
LV = Low voltage (see figure 3)
HV = High voltage (see figure 3)

(a) Optional
(b) Refer to the nameplate on the indoor unit.
(c) Minimum cable section 0.75 $mm^2$.
(d) This device and connection cable is delivered with the domestic hot water tank.

NOTE

Select all cables and wire sizes in accordance with relevant local and national regulations.

After finishing the electric work, confirm that each electric part and terminal inside the electric parts box is connected securely.

### Procedure

1 Using the appropriate cable, connect the power supply and communication cable(s) to the appropriate terminals as shown on the wiring diagram and according to figure 3.

- To avoid receiving electric noise, be sure that the cables are put in the correct bundle and routed in the correct bundle tray as shown in figure 3.
- When wiring, route the cable bundles away from each other by at least 25 mm in order to avoid receiving electric noise (external noise).

2 Fix the cable with cable ties to the cable tie mountings to ensure strain relief and to make sure that it does not come in contact with the piping and sharp edges. Never squeeze bundled cables.

Note: only relevant field wiring is shown in figure 3.

## Installation of the remote controller

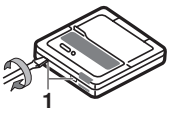
The unit is equipped with a remote controller offering user-friendly way to set up, use and maintain the unit. Before operating the remote controller, follow this installation procedure.

**NOTE** The wiring for connection is not included.

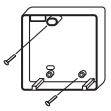
- The remote controller, delivered in a kit, has to be mounted indoors.
- When the remote controller thermostat function is used, select the installation location considering it should be a place:
  - where the average temperature in the room can be detected,
  - that is not exposed to direct sunlight,
  - that is not near a heat source,
  - that is not affected by outside air or air draught due to e.g. door opening/closing,
  - where the display is kept clean,
  - where the temperature is between 0°C and 50°C,
  - where the relative humidity is maximum 80%.

**1** Remove the front part of the remote controller.

Insert a slotted screwdriver into the slots (1) in the rear part of the remote controller, and remove the front part of the remote controller.




**2** Fasten the remote controller on a flat surface.

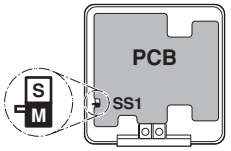


**NOTE** Be careful not to distort the shape of the lower part of the remote controller by over tightening the mounting screws.

**3** Wire the unit.

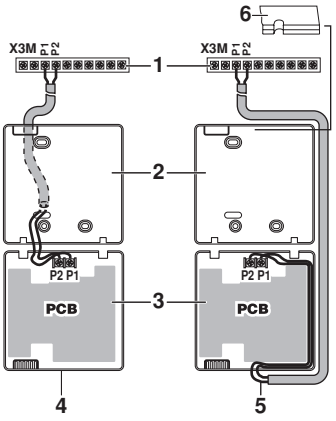
**NOTE** If next to the standard remote controller the optional remote controller is installed as well:

- Connect the electrical wires of both remote controllers in the same way like described below.
- Select a master and a slave remote controller by switching the SS1 selector switch.




**S** Slave
**M** Master

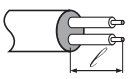
- Only the remote controller set as master can work as room thermostat.




**1** Unit
**2** Rear part of the remote controller
**3** Front part of the remote controller
**4** Wired from the rear
**5** Wired from the top
**6** Notch the part for the wiring to pass through with nippers, etc.

Connect the terminals on top of the front part of the remote controller and the terminals inside the unit (P1 to X3M:P1, P2 to X3M:P2).

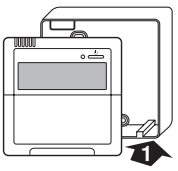
**NOTE** Peel the shield for the part that has to pass through the inside of the remote controller case (⟋).



**4** Reattach the upper part of the remote controller.

Be careful not to pinch the wiring when attaching.

First begin fitting from the clips at the bottom.




## Connection to a benefit kWh rate power supply

Electricity companies throughout the world work hard to provide reliable electric service at competitive prices and are often authorized to bill clients at benefit rates. E.g. time-of-use rates, seasonal rates, Wärmepumpentarif in Germany and Austria, ...

This equipment allows for connection to such benefit rate power supply delivery systems.

Consult with the electricity company acting as provider at the site where this equipment is to be installed to know whether it is appropriate to connect the equipment in one of the benefit kWh rate power supply delivery systems available, if any.

When the equipment is connected to such benefit kWh rate power supply, the electricity company is allowed to:

- interrupt power supply to the equipment for certain periods of time;
- demand that the equipment only consumes a limited amount of electricity during certain periods of time.

The indoor unit is designed to receive an input signal by which the unit switches into forced off mode. At that moment, the unit compressors will not operate.

**WARNING**

**For a benefit kWh rate power supply like illustrated below as type 1**

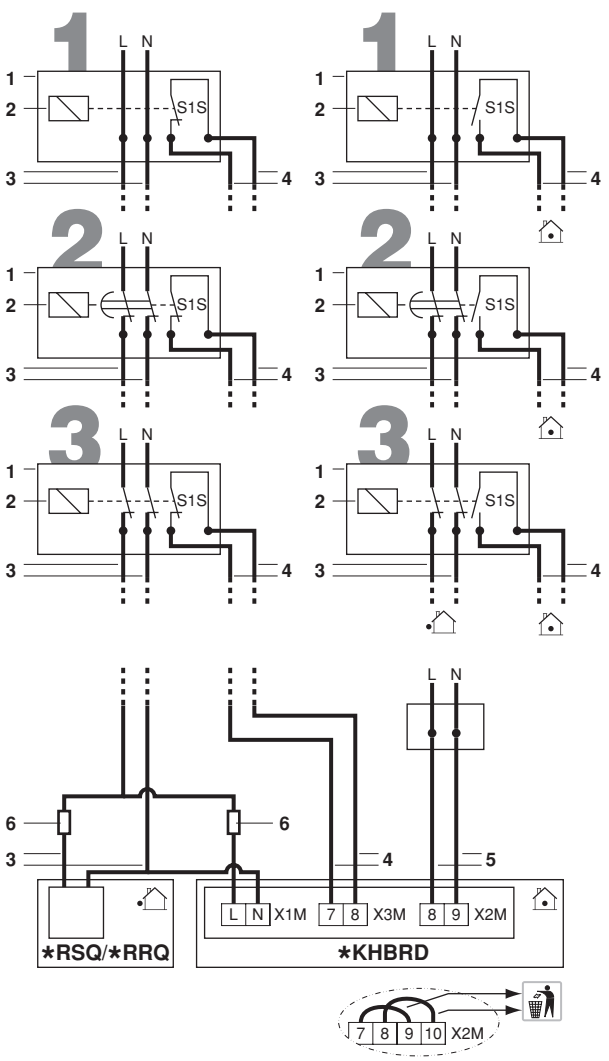
During the period that the benefit kWh rate is active and power supply is continuous, then stand-by power consumption of the inverter PCB is possible.

**Possible types of benefit kWh rate power supply**

Possible connections and requirements to connect the equipment to such power supply are illustrated in the figures below:

**For V1 unit types only (1~)**

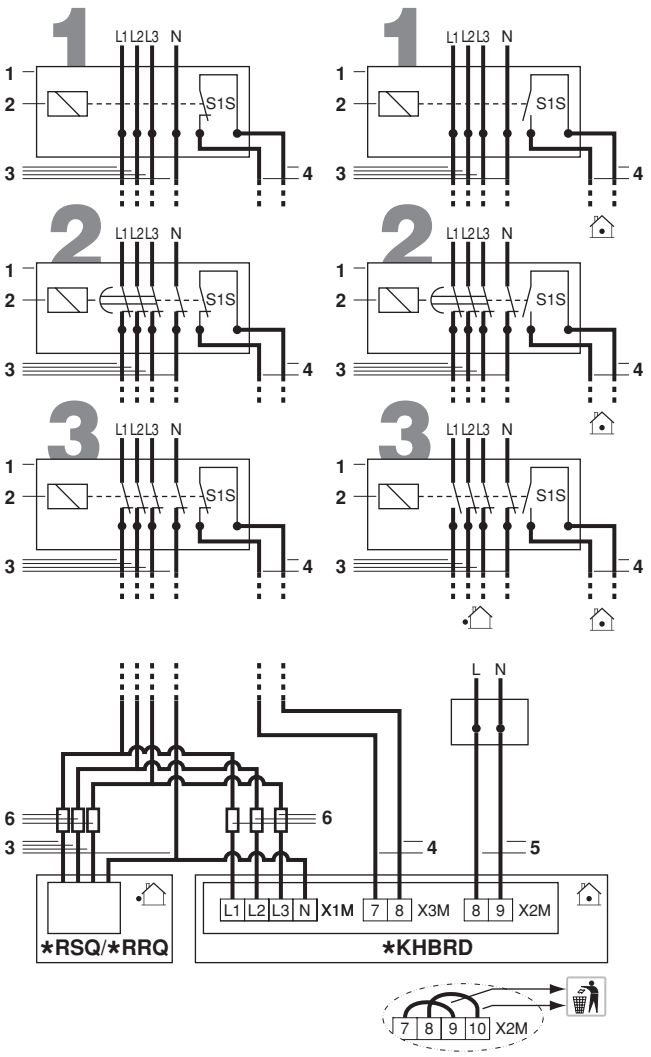
**[6-04]=1** **[6-04]=2**




1 Benefit kWh rate power supply box
2 Receiver controlling the signal of the electricity company
3 Benefit kWh rate power supply
4 Voltage free contact to indoor unit
5 Normal kWh rate power supply
6 Fuse (field supply)

**For Y1 unit types only (3~)**

**[6-04]=1** **[6-04]=2**




1 Benefit kWh rate power supply box
2 Receiver controlling the signal of the electricity company
3 Benefit kWh rate power supply
4 Voltage free contact to indoor unit
5 Normal kWh rate power supply
6 Fuse (field supply)

In case of benefit kWh rate power supply installation, remove the wiring bridges on X2M before installing the normal kWh rate power supply.

When the outdoor unit is connected to a benefit kWh rate power supply, the voltage free contact of the receiver controlling the benefit kWh rate signal of the electricity company must be connected to clamps 7 and 8 of X3M (as illustrated in the figure above).

When parameter [6-04]=1 at the moment that the benefit kWh rate signal is sent by the electricity company, that contact will open and the unit will go in forced off mode(1).

When parameter [6-04]=2 at the moment that the benefit kWh rate signal is sent by the electricity company, that contact will close and the unit will go in forced off mode(2).

(1) When the signal is released again, the voltage free contact will close and the unit will restart operation. It is therefore important to leave the auto restart function enabled. Refer to field setting "[8] Option setup, [8-01]" in the chapter "Field settings" on page 17.

(2) When the signal is released again, the voltage free contact will open and the unit will restart operation. It is therefore important to leave the auto restart function enabled. Refer to field setting "[8] Option setup, [8-01]" in the chapter "Field settings" on page 17.

**Type 1**

The benefit kWh rate power supply is of the type that power supply is not interrupted.

**Type 2**

The benefit kWh rate power supply is of the type that power supply will be interrupted after elapse of time.

**Type 3**

The benefit kWh rate power supply is of the type that power supply is interrupted immediately.

NOTE

If the benefit kWh rate power supply is of the type that power supply is not interrupted, the unit will be forced to off.

## START-UP AND CONFIGURATION

The indoor unit should be configured by the installer to match the installation environment (outdoor climate, installed options, etc.) and user expertise.

It is important that **all** information in this chapter is read sequentially by the installer and that the system is configured as applicable.

### Pre-operation checks

Switch off the power supply before making any connections.

After the installation of the unit, check the following:

**1** Field wiring

Make sure that the field wiring has been carried out according to the instructions described in the chapter "Electrical wiring work" on page 13, according to the wiring diagrams and according to European and national regulations.

**2** Fuses and protection devices

Check that the fuses and other locally installed protection devices are of the size and type specified in the chapter "Electrical specifications" on page 34. Make sure that neither a fuse nor a protection device has been bypassed.

**3** Earth wiring

Make sure that the earth wires have been connected properly and that the earth terminals are tightened.

**4** Internal wiring

Visually check the switch box and the inside of the unit on loose connections or damaged electrical components.

**5** Installation

Check that the unit is properly installed, to avoid abnormal noises and vibrations when starting up the unit.

**6** Damaged equipment

Check the inside of the unit on damaged components or squeezed pipes.

**7** Refrigerant leak

Check the inside of the unit on refrigerant leakage. If there is a refrigerant leak, call your local dealer.

Do not touch any refrigerant which has leaked out of refrigerant piping connections.
This may result in frostbite.

**8** Water leak

Check the inside of the unit on water leakage. In case there is a water leakage close the water inlet and water outlet shut-off valves and call your local dealer.

**9** Power supply voltage

Check the power supply voltage on the local supply panel. The voltage must correspond to the voltage on the identification label of the unit.

**10** Air purge valve

Make sure the air purge valve is open (at least 2 turns).

**11** Shut-off valves

Make sure that the shut-off valves are correctly installed and fully open.

Operating the system with closed valves will damage the pump!

Once all checks are fulfilled, the unit must be closed, only then can the unit be powered up. When the power supply to the indoor unit is turned on, "88" is displayed on the remote controller during its initialization, which might take up to 30 seconds. During this process the remote controller can not be operated.

### Field settings

The indoor unit should be configured by the installer to match the installation environment (outdoor climate, installed options, etc.) and user demand. Thereto, a number of so called field settings are available. These field settings are accessible and programmable through the user interface on the indoor unit.

Each field setting is assigned a 3-digit number or code, for example [5-03], which is indicated on the user interface display. The first digit [5] indicates the 'first code' or field setting group. The second and third digit [03] together indicate the 'second code'.

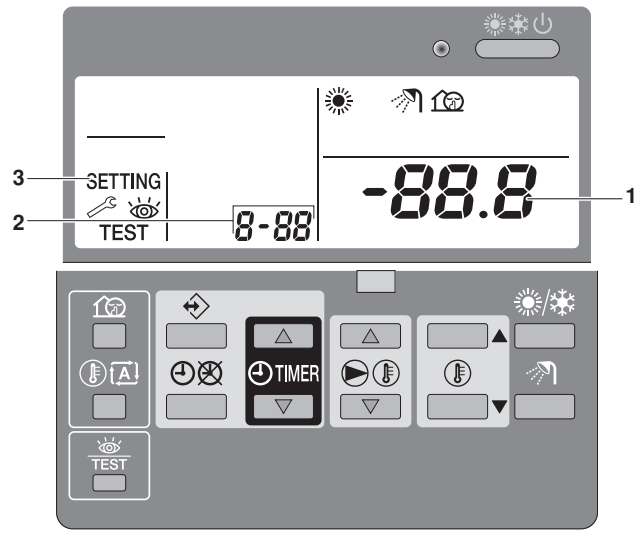
A list of all field settings and default values is given in the "Field settings table" on page 28. In this list we provided for 2 columns to register the date and value of altered field settings at variance with the default value.

A detailed description of each field setting is given under "Detailed description" on page 18.

Refer to the Annex on page 35 for a detailed overview and guide to start-up of the unit.

## Procedure

To change one or more field settings, proceed as follows.




1 Press the TEST button for a minimum of 5 seconds to enter FIELD SET MODE.
The SETTING icon (3) will be displayed. The current selected field setting code is indicated *8-88* (2), with the set value displayed to the right *-88.8* (1).

2 Press the ▶/▲ button to select the appropriate field setting first code.

3 Press the ▶/▼ button to select the appropriate field setting second code.

4 Press the TIMER▲ button and TIMER▼ button to change the set value of the select field setting.

5 Save the new value by pressing the ⊗ button.

6 Repeat step 2 through 4 to change other field settings as required.

7 When finished, press the TEST button to exit FIELD SET MODE.

**NOTE** Changes made to a specific field setting are only stored when the ⊗ button is pressed. Navigating to a new field setting code or pressing the TEST button will discard the change made.

**NOTE**
- Before shipping, the set values have been set as shown under "Field settings table" on page 28.
- When exiting FIELD SET MODE, "88" may be displayed on the remote controller LCD while the unit initializes itself.

**NOTE** When running through the field settings you may notice that there are some more field settings as there are mentioned in the "Field settings table" on page 28. **These field settings are not applicable and may not be changed**!

## Detailed description

### [0] Remote control setup

■ **[0-00]** User permission level

The remote controller can be programmed to make certain buttons and functions unavailable for the user. There are 2 permission levels defined. Both levels (level 2 and level 3) are basically the same, the only difference is that for level 3 no water temperature settings are possible (see table below).

| | Permission | |
|---|---|---|
| | level 2 | level 3 |
| Operation ON/OFF | Operable | Operable |
| Domestic water heating operation ON/OFF | Operable | Operable |
| Setting the leaving water temperature | Operable | — |
| Setting the room temperature | Operable | Operable |
| Quiet mode ON/OFF | — | — |
| Weather dependent set point operation ON/OFF | Operable | — |
| Setting the clock | — | — |
| Programming the schedule timer | — | — |
| Schedule timer operation ON/OFF | Operable | Operable |
| Field settings | — | — |
| Error code display | Operable | Operable |
| Test operation | — | — |

By default no level is defined so all buttons and functions are operable.

The actual permission level is determined by field setting. For permission level 2, set field setting [0-00] is to 2, for permission level 3, set field setting [0-00] to 3.

Once the field setting is set, the chosen permission level is not yet active. Enabling the selected permission level is done by simultaneously pressing buttons ⊗▲ and ⊗▼ immediately followed by simultaneously pressing buttons ⌂ and ⏻/A, and keeping all 4 buttons pressed for at least 5 seconds. Note that no indication on the remote controller is given. After the procedure the blocked buttons will not be available anymore.

Deactivating the selected permission level is done on the same way.

■ **[0-01]** Room temperature compensation value

If needed, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.

The compensated temperature (= measured temperature plus compensation value) is then used for controlling the system and will be displayed in the temperature read-out mode. See also "[9] Automatic temperature compensation" on page 22 for compensation values for leaving water temperature and domestic hot water temperature.

■ **[0-03]** Status: defines whether the ON/OFF instruction can be used in the schedule timer for space heating.

The schedule timer for space heating can be programmed on 2 different ways: based on the temperature set point (both leaving water temperature and room temperature) and based on the ON/OFF instruction.

**NOTE** By default space heating based on temperature set point (method 1) is enabled, so only temperature shifts are possible (no ON/OFF instruction).

Advantage of this method is that you can simply switch off the space heating operation by pushing the ❄/⏻ button without disabling the automatic domestic hot water storage operation (e.g. during summertime when no space heating is required).

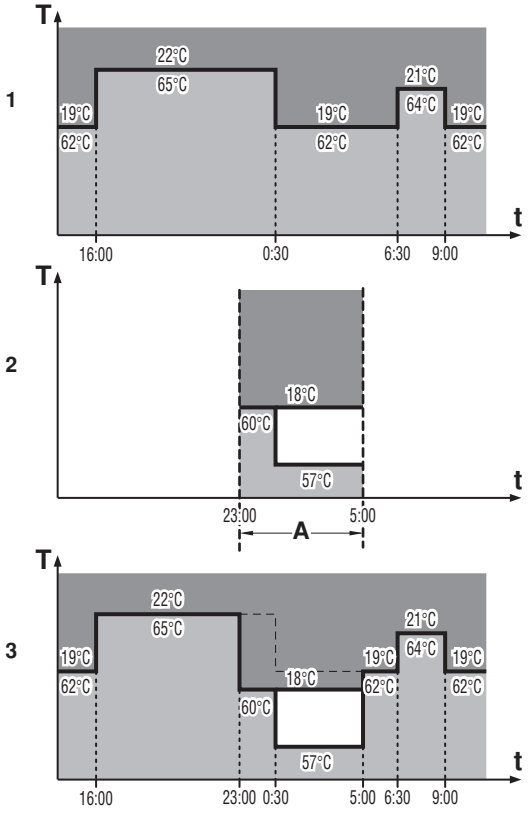
In the following tables both methods on how to interpret the schedule timer are shown.

| Method 1 | Space heating based on temperature set point[(a)] |
|---|---|
| During operation | During schedule timer operation the operation LED is lit continuously. |
| When pushing the button | The schedule timer for space heating will stop and will not start again.<br>The controller will be switched off (operation LED will stop working).<br>However, the schedule timer icon will stay displayed which means that the domestic water heating stays enabled. |
| When pushing the ⊗/⊖ button | The schedule timer for space heating **and** domestic water heating along with the quiet mode will be stopped and will not start again.<br>The schedule timer icon will not be displayed anymore. |

(a) For leaving water temperature and/or room temperature

**Operation example**: Schedule timer based on temperature set points.

When setback function is enabled, the setback operation will have priority over the scheduled action in the schedule timer.

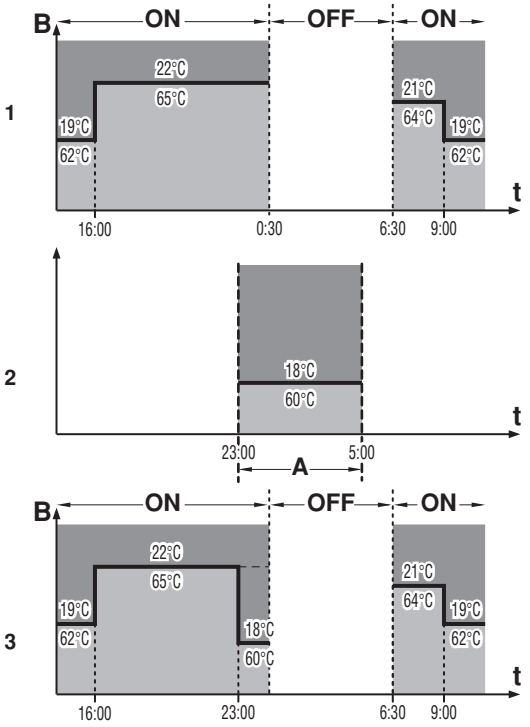



**1** Schedule timer
**2** Setback function
**3** When both setback function and schedule timer are enabled
**A** Setback function
**t** Time
**T** Temperature set point
Room temperature
Leaving water temperature

| Method 2 | Space heating based on ON/OFF instruction |
|---|---|
| During operation | When the schedule timer switches space heating OFF, the controller will be switched off (operation LED will stop working). Note that this has no influence on the domestic water heating. |
| When pushing the button | The schedule timer for space heating will stop (when active at that moment) and will start again at the next scheduled ON function.<br>The "last" programmed command overrules the "preceding" programmed command and will remain active until the "next" programmed command occurs.<br>Example: imagine the actual time is 17:30 and actions are programmed at 13:00, 16:00 and 19:00. The "last" programmed command (16:00) overruled the "previous" programmed command (13:00) and will remain active until the "next" programmed command (19:00) occurs.<br>So in order to know the actual setting, one should consult the last programmed command. It is clear that the "last" programmed command may date from the day before. Refer to the operation manual.<br>The controller will be switched off (operation LED will stop working).<br>However the schedule timer icon will stay displayed which means that the domestic heating stays enabled. |
| When pushing the ⊗/⊖ button | The schedule timer for space heating **and** domestic water heating along with the quiet mode will be stopped and will not start again.<br>The schedule timer icon will not be displayed anymore. |

**Operation example**: Schedule timer based on ON/OFF instruction.

When setback function is enabled, the setback operation will have priority over the scheduled action in the schedule timer if ON instruction is active. If OFF instruction is active this will have priority over the setback function. At any time the OFF instruction will have the highest priority.




**1** Schedule timer
**2** Setback function
**3** When both setback function and schedule timer are enabled
**A** Setback function
**B** ON/OFF instruction
**t** Time
**T** Temperature set point
Room temperature
Leaving water temperature

**[1] Automatic storage timing for domestic water heating**

In this mode, the indoor unit will deliver hot water to the domestic hot water tank based on the daily fixed pattern. This mode will continue until storage temperature is reached.

Automatic storage is the advised domestic hot water mode. In this mode water heats up during the night (when space heating requirements are lower) until the storage set point. The heated water is stored in the domestic hot water tank at a higher temperature so it can fulfil the domestic hot water requirements throughout the day.

The storage temperature set point and timing are field settings.

- **[1-00]** Status: defines whether the domestic water heating (storage mode) during night is enabled (1) or not (0).
- **[1-01]** Start time: time of the night at which the domestic water should be heated.
- **[1-02]** Status: defines whether the domestic water heating (storage mode) during daytime is enabled (1) or not (0).
- **[1-03]** Start time: time of the day at which the domestic water should be heated.

**NOTE**

- Make sure the domestic hot water is only heated up to the domestic hot water temperature you require.

  Start with a low domestic hot water storage temperature set point, and only increase if you feel that the domestic hot water supply temperature is not sufficient for your needs (this depends on your water using pattern).
- Make sure the domestic hot water is not heated unnecessary. Start with activating automatic storage during night (default setting). If it seems that the domestic hot water night storage operation is not sufficient for your needs, an additional storage during daytime can be set.
- For energy-saving purposes, it is advised to enable the weather dependent domestic water heating. Refer to setting "[b-02]" on page 23.

Refer to "[b] Domestic hot water set points" on page 22 for temperature set points.

**[2] Automatic setback function**

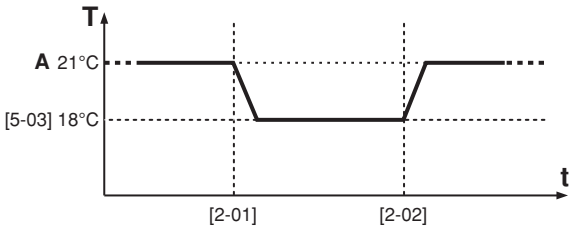
Setback function provides the possibility to lower the room temperature. The setback function can for instance be activated during the night because the temperature demands during night and day are not the same.

**NOTE**

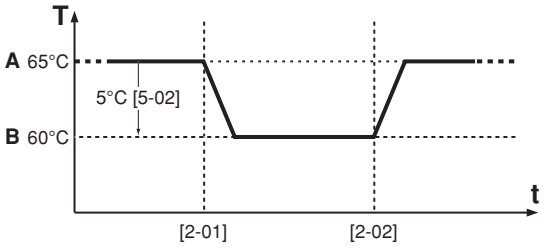
- By default the setback function is enabled.
- The setback function can be combined with the automatic weather dependent set point operation.
- Setback function is an automatic daily scheduled function.

- **[2-00]** Status: defines whether the setback function is turned ON (1) or OFF (0)
- **[2-01]** Start time: time at which setback is started
- **[2-02]** Stop time: time at which setback is stopped

Setback can be configured for both room temperature control and leaving water temperature control.




**A** Normal room temperature set point
**t** Time
**T** Temperature




**A** Normal leaving water temperature set point
**B** Leaving water setback temperature
**t** Time
**T** Temperature

It is advised to set the start time of automatic storage during night [1-01] on the moment that the setback function starts [2-01].

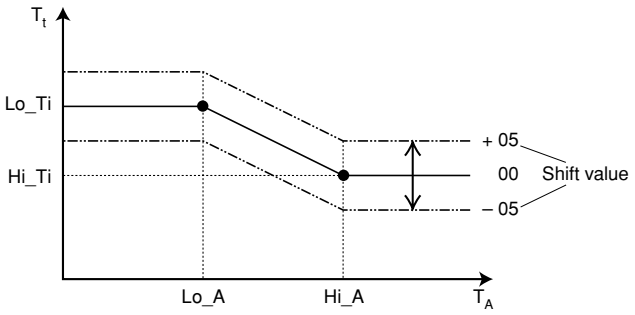
Refer to "[5] Automatic setback and disinfection set point" on page 21 for temperature set points.

**[3] Weather dependent set point**

When weather dependent operation is active, the leaving water temperature is determined automatically depending on the outdoor temperature: colder outdoor temperatures will result in warmer water and vice versa. The unit has a floating set point. Activating this operation will result in a lower power consumption than use with a manually fixed leaving water set point.

During weather dependent operation, the user has the possibility to shift up or down the target water temperature by a maximum of 5°C. This "Shift value" is the temperature difference between the temperature set point calculated by the controller and the real set point. E.g. a positive shift value means that the real temperature set point will be higher than the calculated set point.

It is advised to use the weather dependent set point because it adjusts the water temperature to the actual needs for space heating. It will prevent the unit from switching too much between thermo ON operation and thermo OFF operation when using the remote controller room thermostat or external room thermostat.




$T_t$ Target water temperature
$T_A$ Ambient (outdoor) temperature
Shift value = Shift value

- **[3-00]** Low ambient temperature (Lo_A): low outdoor temperature.
- **[3-01]** High ambient temperature (Hi_A): high outdoor temperature.
- **[3-02]** Set point at low ambient temperature (Lo_Ti): the target outgoing water temperature when the outdoor temperature equals or drops below the low ambient temperature (Lo_A).

  Note that the Lo_Ti value should be higher than Hi_Ti, as for colder outdoor temperatures (i.e. Lo_A) warmer water is required.
- **[3-03]** Set point at high ambient temperature (Hi_Ti): the target outgoing water temperature when the outdoor temperature equals or rises above the high ambient temperature (Hi_A).

  Note that the Hi_Ti value should be lower than Lo_Ti, as for warmer outdoor temperatures (i.e. Hi_A) less warm water suffices.

NOTE If by mistake the value of [3-03] is set higher than the value of [3-02], the value of [3-03] will always be used.

**[4] Disinfection function**

This mode will disinfect the domestic hot water tank by periodically heating the domestic water to a specific temperature.

NOTE If a domestic hot water tank is installed, the disinfection function is enabled by default.

- **[4-00]** Status: defines whether the disinfection function is turned ON (1) or OFF (0).
- **[4-01]** Operation interval: day of the week at which the domestic water should be heated.
- **[4-02]** Start time: time at which the disinfection operation is started

Even if all schedule timers are de-activated and there is no reheat function active, the disinfection function will operate if a domestic hot water tank is installed and field setting [4-00] is set to ON.

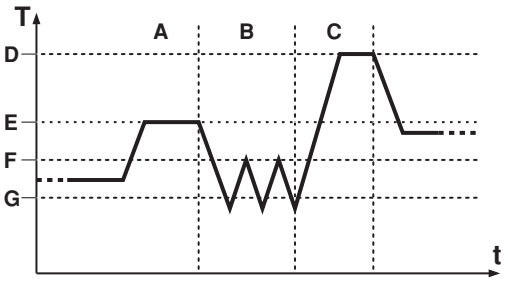
The disinfection function field settings must be configured by the installer according to national and local regulations.

Refer to "[5] Automatic setback and disinfection set point" for temperature set points.

**[5] Automatic setback and disinfection set point**

See also "[4] Disinfection function" on page 21 for more information about the disinfection operation.

- **[5-00]** Set point: disinfection water temperature to be reached
- **[5-01]** Interval: time period defining how long the disinfection temperature set point should be maintained




**A** Storage operation (if activated)

**B** Reheat operation (if activated)

**C** Disinfection operation (if activated)

**Field settings**

**D** Disinfection operation temperature [5-00] (e.g. 70°C)

**E** Hot water storage temperature [b-03] (e.g. 60°C)

**F** Reheat maximum water temperature [b-01] (e.g. 45°C)

**G** Reheat minimum water temperature [b-00] (e.g. 35°C)

**t** Time

**T** Domestic hot water tank temperature

See also "[2] Automatic setback function" on page 20 for more information about the setback operation.

- **[5-02]** Leaving water setback temperature
- **[5-03]** Room setback temperature

**[6] Option setup**

- **[6-00]** Domestic hot water tank option

  If the domestic hot water tank is installed, its operation must be enabled by field setting. Default [6-00] = 0 which means no tank is installed. Set [6-00] to 1 if the optional domestic hot water tank is installed.

  NOTE When enabling the domestic hot water tank option be aware that the advised default settings become active:
  - **[1-00]** = 1 = automatic night storage
  - **[4-00]** = 1 = disinfection function
- **[6-01]** External room thermostat option

  If the optional external room thermostat is installed, its operation must be enabled by field setting. Default [6-01] = 0, which means no external room thermostat is installed. Set [6-01] to 1 if the optional external room thermostat is installed.

  The external room thermostat only gives an ON/OFF signal to the heat pump based on the room temperature. Because it does not give continuous feedback information to the heat pump, it is supplementary to the remote controller room thermostat function. To have a good control of the system and avoiding frequent ON/OFF it is advised to use the automatic weather dependent set point operation.
- **[6-04]** Benefit kWh rate power supply mode

  If benefit kWh rate power supply is used, the mode must be selected. Default [6-04] = 0 which means no benefit kWh rate power supply is used.

  Set [6-04] to 1 to use benefit kWh rate power supply mode 1 (normally closed contact which will open when the power supply is interrupted), or set [6-04] to 2 to use benefit kWh rate power supply mode 2 (normally opened contact which will close when the power supply is interrupted).

See "Connection to a benefit kWh rate power supply" on page 15 for more information.

**[7] Option setup**

- **[7-00]** Bottom plate heater option

  An optional bottom plate heater can be installed in your outdoor unit. In case an ERRQ* outdoor unit (special model with freeze-up countermeasures) is installed, the unit will have the bottom plate heater already standard installed.

  If the bottom plate heater is installed, its operation must be enabled by field setting. Default [7-00] = 0 which means no bottom plate heater is installed. Set [7-00] to 1 if the bottom plate heater is installed.
- **[7-02]** See chapter "Multiple set point control" on page 26
- **[7-03]** See chapter "Multiple set point control" on page 26
- **[7-04]** See chapter "Multiple set point control" on page 26

**[8] Option setup**

- **[8-00]** Remote controller temperature control

  When using the remote control delivered with the unit, 2 types of temperature control are possible. Default [8-00] = 1 which means that the remote controller is used as room thermostat, so the remote controller can be placed in the living room to control the room temperature. Set [8-00] to 0 to use the unit in leaving water temperature control.

- **[8-01]** Auto restart

  When a power failure occurred and the power returns to the unit, the system will automatically restore it's settings and restart. This is the default setting [8-01] = 1. To disable this auto restart function, set [8-01] to 0.

NOTE

When power returns after a power supply failure, the auto restart function reapplies the remote controller settings at the time of the power supply failure. It is therefore recommended to leave the auto restart function enabled. Note that with the function disabled the schedule timer will not be activated when power returns to the unit after a power supply failure. Press the ⏲⊗ button to enable the schedule timer again.

- **[8-03]** Quiet mode

  The unit has a quiet mode functionality for which 3 levels can be selected:

  - **[8-03]** = 1 low noise level 1 (default)
  - **[8-03]** = 2 low noise level 2
  - **[8-03]** = 3 low noise level 3

  Activating this quiet mode is done by pushing the QUIET MODE button on the remote controller or through the schedule timer.

- **[8-04]** Freeze-up prevention

  The unit has a freeze-up prevention functionality for which 3 levels can be selected:

  - **[8-04]** = 0 prevention level 0 (default: no prevention)
  - **[8-04]** = 1 prevention level 1
  - **[8-04]** = 2 prevention level 2

  The freeze-up prevention is only active when the unit is in thermo OFF condition. If prevention level 1 is enabled, the freeze-up prevention will start if the outdoor ambient temperature <4°C and if leaving or return water temperature <7°C. For prevention level 2, the freeze-up prevention will start as soon as the ambient temperature <4°C.

  For both cases the pump will operate and if leaving or return water <5°C for 5 minutes the unit will start up to prevent too low temperatures.

  It is advised to enable freeze-up prevention if the indoor unit is located in a colder ambient room (e.g. garage, ...) to prevent water freeze-up.

**[9] Automatic temperature compensation**

If needed, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.

The compensated temperature (= measured temperature plus compensation value) is then used for controlling the system and will be displayed in the temperature read-out mode.

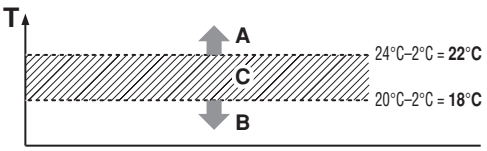
- **[9-00]** Leaving water temperature compensation value
- **[9-01]** Domestic hot water tank compensation value
- **[9-02]** Tthermo ON/OFF admission

  By changing this value the operation range for space heating operation can be modified.

  If the ambient temperature becomes higher than (24°C + the value of [9-02]) no space heating is possible.

  Space heating can be requested as long as the ambient temperature is lower than (20°C + the value of [9-02]).

  **Example:** [9-02] = –2°C




| | |
|---|---|
| **A** | No space heating operation possible |
| **B** | Request for space heating possible |
| **C** | Hysteresis area |
| **T** | Ambient temperature |

**[A] Option setup**

- **[A-02]** Temperature difference for leaving and returning water

  The unit is designed to support radiator operation. The advised leaving water temperature (set by the remote controller) for radiators is 65°C. In such a case the unit will be controlled to realize a temperature difference (ΔT) of 10°C, which means that the returning water to the unit is around 55°C.

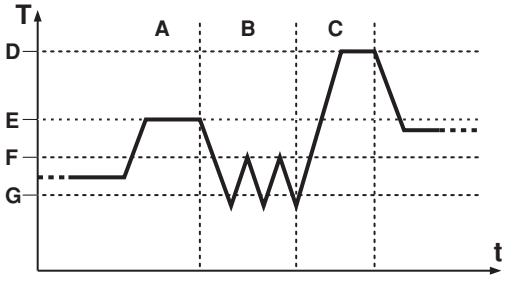
  Depending on the installed application (radiators, fan coil units, ...) or situation, it can be required to change the ΔT. This can be done by changing field setting [A-02].

- **[A-03]** See chapter "Multiple set point control" on page 26.
- **[A-04]** See chapter "Multiple set point control" on page 26

**[b] Domestic hot water set points**

The reheat mode will prevent the domestic hot water from cooling down lower than a certain temperature. When enabled the indoor unit will deliver hot water to the domestic hot water tank if the reheat minimum value is reached. The domestic water heating will continue until the reheat maximum temperature is reached. In this way always a minimum of domestic hot water is available.

- **[b-00]** Set point: reheat minimum temperature (see figure below).
- **[b-01]** Set point: reheat maximum temperature (see figure below).




| | |
|---|---|
| **A** | Storage operation (if activated) |
| **B** | Reheat operation (if activated) |
| **C** | Disinfection operation (if activated) |

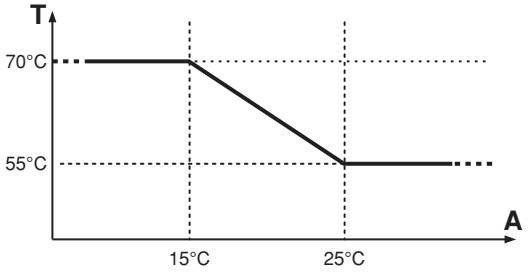
**Field settings**

| | |
|---|---|
| **D** | Disinfection operation temperature [5-00] (e.g. 70°C) |
| **E** | Hot water storage temperature [b-03] (e.g. 60°C) |
| **F** | Reheat maximum water temperature [b-01] (e.g. 45°C) |
| **G** | Reheat minimum water temperature [b-00] (e.g. 35°C) |
| **t** | Time |
| **T** | Domestic hot water tank temperature |

- **[b-02]** Status: defines whether the weather dependent domestic water heating is turned ON (1) or OFF (0).

  If enabled, the storage set point will be set weather dependent.

  In case of a higher ambient temperature (e.g. during summer-time), the cold supply water to the mixing tap (e.g. shower, bath) will also have a higher temperature. This makes that the temperature of the hot water from the domestic hot water tank may be lower to reach the same water mixing temperature from the shower or bath mixing tap. In this way, with a lower domestic hot water tank temperature setting the comfort level can be kept the same but with a lower energy consumption.




| | |
|---|---|
| **A** | Ambient temperature |
| **T** | Domestic hot water storage temperature |

NOTE The temperatures for weather dependent domestic water heating (see figure) are fixed and can not be changed.

- **[b-03]** Set point: storage temperature (see figure above)

NOTE If weather dependent domestic water heating is enabled [b-02], the storage temperature will be set automatically and the field setting [b-03] will be of no importance.

**[C] Leaving water temperature limits**

To prevent misuse concerning leaving water temperatures, it is possible to limit the set points.

- **[C-00]** Set point: leaving water maximum temperature
- **[C-01]** Set point: leaving water minimum temperature

**[d] Domestic water heating retention times**

The heat pump can only work in either space heating operation or domestic water heating operation. No simultaneous operation is possible, except when using multiple set point control (see chapter "Multiple set point control" on page 26 for more information).

- **[d-00]** Set point: minimum operation time for domestic water heating
- **[d-01]** Set point: maximum operation time for domestic water heating
- **[d-02]** Set point: interval minimum stop time of domestic water heating

Changing the timer values can have an impact on space heating and domestic water heating heat up timers. The default values are proposed but can be changed depending on the complete system installation.

For a detailed explanation about simultaneous request of space heating and domestic water heating, see chapter "Simultaneous demand of space heating and domestic water heating" on page 23.

**[E] Service mode**

- **[E-00]** Vacuum mode

  When recovering/vacuuming of the indoor unit is needed, field setting [E-00] can be activated. It will force the unit into thermo OFF and will open the expansion valve of the indoor unit R134a circuit so full vacuuming is possible.

  By default [E-00] = 0, set to 1 to enable the vacuum mode.

NOTE Do not forget to restore the field setting [E-00] to the default value when vacuuming is finished!

- **[E-04]** Pump only operation

  When commissioning and installing the unit it is very important to get all air out of the water circuit.

  Through this field setting the pump can be operated without actual operation of the unit. By doing so this will enhance the air removal from the circuit. The pump can operate at different speed:

  - **[E-04]** = 0 normal operation of the unit (default)
  - **[E-04]** = 1 low pump speed operation
  - **[E-04]** = 2 high pump speed operation

See chapter "Final check" on page 30 for more information.

NOTE Do not forget to restore the field setting [E-04] to the default value when commissioning is finished!

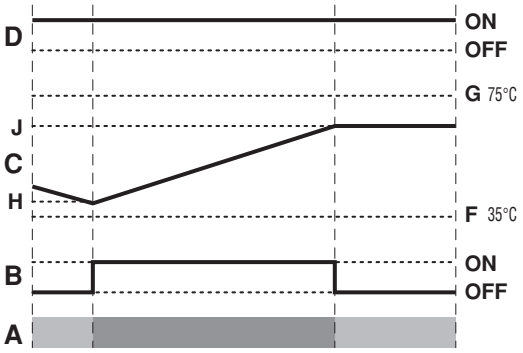
## Simultaneous demand of space heating and domestic water heating

**Remote controller leaving water temperature control**

When the reheat temperature is reached, the further heat up till storage temperature of the domestic hot water tank will be decided by the running timers which are programmed by the installer.

**1** Reheat operation

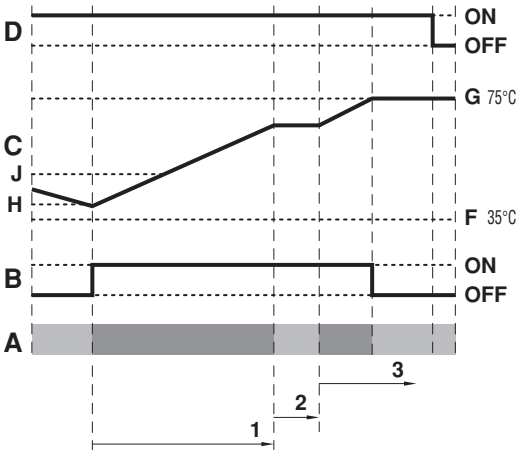
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.




| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water reheat thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Leaving water thermo-on request |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **ON** | ON |
| **OFF** | OFF |

**2** Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated according to running timer, then space heating will start again according to running timer, then domestic water heating will start again according to running timer, this will continue till storage set point is reached.



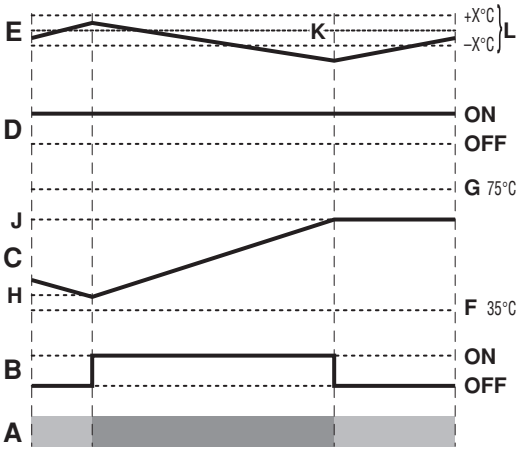

| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water storage thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Leaving water thermo-on request |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **ON** | ON |
| **OFF** | OFF |
| **1** | Minimum operation time for domestic water heating (initial 30 minutes [d-01]) |
| **2** | Interval minimum stop time for domestic water heating (initial 15 minutes [d-02]) |
| **3** | Maximum operation time for domestic water heating (initial 30 minutes [d-01]) |

**External room thermostat**

When the reheat temperature is reached, the further heat up of the domestic hot water tank will be decided by the external room thermostat thermo conditions and running timers which are programmed by the installer.

**1** Reheat operation

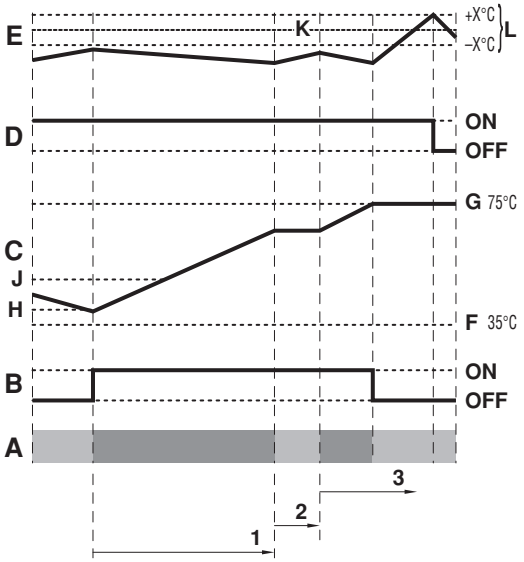
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.




| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water reheat thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Room temperature thermo-on request |
| **E** | Remote controller room temperature |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **K** | External room thermostat set point |
| **L** | External room thermostat ON/OFF hysteresis |
| **ON** | ON |
| **OFF** | OFF |

**2** Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated according to running timer, then space heating will start again according to running timer, then domestic water heating will start again according to running timer, this will continue till storage set point is reached.



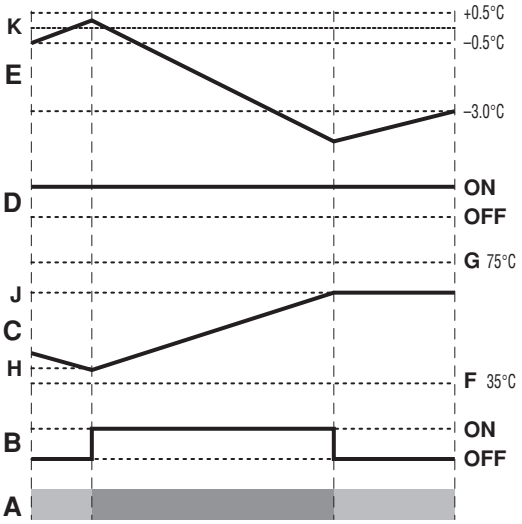

| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water storage thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Room temperature thermo-on request |
| **E** | Remote controller room temperature |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **K** | External room thermostat set point |
| **L** | External room thermostat ON/OFF hysteresis |
| **ON** | ON |
| **OFF** | OFF |
| **1** | Minimum operation time for domestic water heating (initial 30 minutes [d-01]) |
| **2** | Interval minimum stop time for domestic water heating (initial 15 minutes [d-02]) |
| **3** | Maximum operation time for domestic water heating (initial 30 minutes [d-01]) |

**Remote controller room temperature control**

When the reheat temperature is reached, the further heat up till storage temperature of the domestic hot water tank will be decided by the remote controller room thermostat in order to prevent the room temperature to drop too much.

**1** Reheat operation

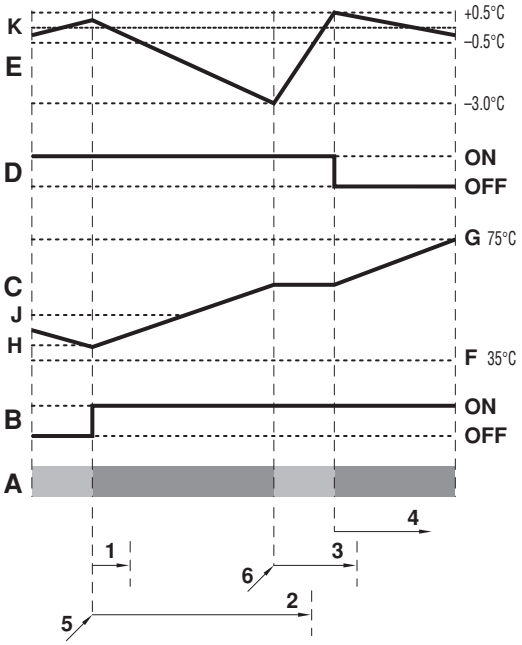
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.




| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water reheat thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Room temperature thermo-on request |
| **E** | Remote controller room temperature |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **K** | Remote controller thermostat set point |
| **ON** | ON |
| **OFF** | OFF |

**2** Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated, but as soon as the room temperature drops 3°C from set point, space heating will start till 0.5°C above set point, then domestic water will be heated again till storage set point.




| | |
|---|---|
| **A** | Operation |
| | Space heating |
| | Domestic water heating |
| **B** | Domestic hot water storage thermo-on request |
| **C** | Domestic hot water tank temperature |
| **D** | Room temperature thermo-on request |
| **E** | Remote controller room temperature |
| **F** | Domestic hot water lower limit temperature |
| **G** | Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03] |
| **H** | Domestic hot water reheat minimum temperature [b-00] |
| **J** | Domestic hot water reheat maximum temperature [b-01] |
| **K** | Remote controller thermostat set point |
| **ON** | ON |
| **OFF** | OFF |
| **1** | Minimum operation time for domestic water heating (initial 10 minutes [d-00])(a) |
| **2** | Maximum operation time for domestic water heating (initial 30 minutes [d-01])(b) |
| **3** | Interval minimum stop time for domestic water heating (initial 15 minutes [d-02]) |
| **4** | No simultaneous operation |
| **5** | Timers for domestic water heating start |
| **6** | Timer for space heating start |

(a) The minimum operation time is only valid when room temperature is more than 3°C lower as set point and set point J is reached.
(b) The maximum operation time is only valid when room temperature is more than 0.5°C lower as set point and set point J is reached.

## Multiple set point control

If you want to use multiple set point control, a temperature reducing device (TRD) is needed. The temperature reducing device converts the high inlet water temperature to a reduced water outlet temperature which will be delivered to the appliance(s).

When temperature reducing devices are installed, the system can be configured to use multiple water set points.

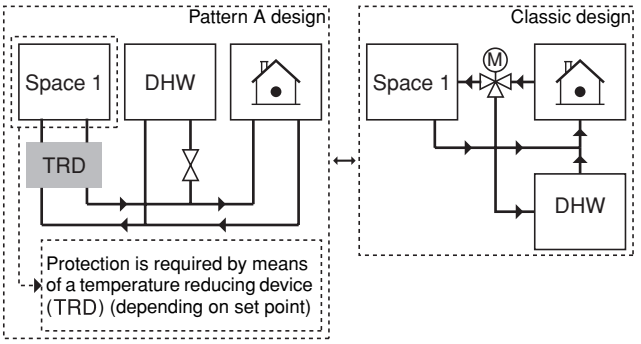
The water set points can be selected in function of multiple set point operation patterns.

Below the 2 possible patterns are explained in detail.

**Multiple set point control according to pattern A**

During normal operation, domestic water heating and space heating modes are separated and activated intermittent to fulfil a simultaneous request. Therefor multiple set point pattern A can be configured to allow simultaneous domestic water heating and space heating operation without intermission.

**Schematic overview:**



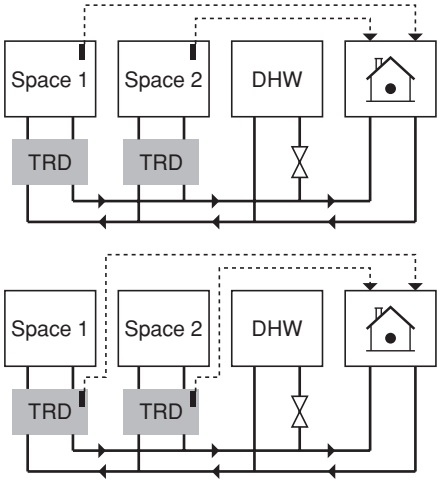

| | |
|---|---|
| | Indoor unit |
| **DHW** | Domestic hot water tank |
| TRD | Temperature reducing device |
| **Space 1** | Space 1 |

- During space heating operation, water is provided based on the selected water temperature set point for space heating. A shut-off valve (field supply) must be installed in the domestic hot water tank coil circuit. The valve must be closed to protect the domestic hot water tank from cooling down by lower temperature water going through the coil during space heating.
- During domestic water heating operation, the water temperature set point is normally higher than the set point requested during space heating operation. The valve allowing water to enter the domestic hot water tank coil is open. The heat pump will deliver water with a higher temperature which is needed for production of the domestic hot water. At that time, the lower temperature appliances have to be protected against the higher water temperature by a temperature reducing valve.

The configuration of pattern A allows 2 space heating set points and one (same as in the classic design) domestic hot water set point.

The request signals for space heating can be implemented in 2 different ways (installer choice):

- thermo ON/OFF signal (from external room thermostat)
- status signal (active/not active) from the corresponding temperature reducing device (TRD)




| | |
|---|---|
| | Indoor unit |
| **DHW** | Domestic hot water tank |
| TRD | Temperature reducing device |
| **Space 1** | Space 1 |
| **Space 2** | Space 2 |

*The configuration of pattern A is done by field settings:*

**1** Select the appropriate pattern: [7-02] = 0

**2** Turn on multiple set point 1: [7-03] = 0 → [7-03] = 1

Turn on multiple set point 2: [7-04] = 0 → [7-04] = 1

**3** Enter the temperature multiple set point 1: [A-03] (see below)

Enter the temperature multiple set point 2: [A-04] (see below)

**Configuration example:**

| | Set point | Field setting | Thermo status | | | | |
|---|---|---|---|---|---|---|---|
| Domestic hot water | 70°C(a) | [b-03] | OFF | ON | OFF | OFF | OFF |
| Space 1 | 65°C | [A-03] | OFF | ON/OFF | ON | ON | OFF |
| Space 2 | 35°C | [A-04] | OFF | ON/OFF | ON | ON | ON |
| Resulting heat pump water | | | OFF | >70°C | 65°C | 65°C | 35°C |

(a) The water temperature needed to reach this set point of course is higher than 70°C.

**NOTE**

- If the system is configured according to pattern A, nor the remote controller room thermostat function (default OFF if multiple set point is selected) nor the external room thermostat (as replacement of the remote controller room thermostat function) may be used.
- The remote controller water temperature value is ignored when pattern A is active.
- It is the installers responsibility to make sure no unwanted situations can occur (e.g. too high water temperatures towards floor heating loops, etc.).
- It is the installers responsibility to make sure the water circuit is well balanced (e.g. when a domestic hot water request occurs, there will be sufficient flow towards other appliances as well, etc.)
- Daikin does not offer any temperature reducing device (TRD). This system only provides the possibility to use multiple set points.
- It is advised to only use the automatic storage functionality for domestic water heating when applying pattern A (with a high set point temperature).

**Multiple set point control according to pattern B**

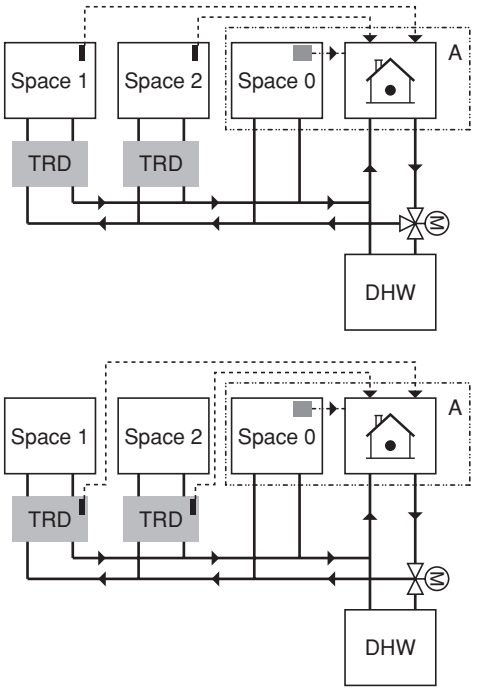
The basic setup of multiple set point pattern B is the same as a normal classic design, so again no domestic water heating and space heating is possible simultaneously.

Multiple set point pattern B is focussed on space heating operation and allows using multiple water set points in combination with the remote controller or external room thermostat.

The configuration of pattern B allows space heating set points and the domestic hot water set point.

The request signals for space heating can be implemented in 2 different ways (installer choice):

- thermo ON/OFF signal (from external room thermostat)
- status signal (active/not active) from the corresponding temperature reducing device




| | |
|---|---|
| | Indoor unit |
| **DHW** | Domestic hot water tank |
| TRD | Temperature reducing device |
| **Space 0** | Space 0 |
| **Space 1** | Space 1 |
| **Space 2** | Space 2 |
| **A** | Classic room thermostat control with remote controller room thermostat function and external room thermostat |

Space 0, not using a temperature reducing device (TRD), always needs to be linked with the highest water temperature set point and can be controlled by the remote controller room thermostat function or by the external room thermostat. Settings for space 0 can be made on the remote controller (same as during normal operation(1)).

(1) When using the automatic weather dependent function for setting of space 0, you have to make sure that the lowest possible temperature of the space 0 floating set point (including the possible negative shift value) is higher than the temperature set point of spaces 1 and 2.
This means that field setting [3-03] of space 0 needs to be higher than temperature set point of spaces 1 and 2.

*The configuration of pattern B is done by field settings:*

**1** Select the appropriate pattern: [7-02] = 1

**2** Turn on multiple set point 1: [7-03] = 0 → [7-03] = 1

Turn on multiple set point 2: [7-04] = 0 → [7-04] = 1

**3** Enter the temperature multiple set point 1: [A-03] (see below)

Enter the temperature multiple set point 2: [A-04] (see below)

**Configuration example:**

| | Set point | Field setting | Thermo status | | | | |
|---|---|---|---|---|---|---|---|
| Space 0 | 65°C | Remote controller | OFF | ON | OFF | OFF | OFF |
| Space 1 | 45°C | [A-03] | OFF | ON/OFF | ON | ON | OFF |
| Space 2 | 35°C | [A-04] | OFF | ON/OFF | OFF | ON | ON |
| Resulting heat pump water | | | OFF | 65°C | 45°C | 45°C | 35°C |

Pattern B can also be used to do some primary multi zoning (if all set point temperatures are selected the same, no temperature reducing device (TRD) is required).

Multiple thermo ON signals for 3 rooms can be generated. Thermo OFF signals are only valid if all requests are OFF.

**NOTE**

- Leaving water control is not allowed for pattern B.
- It is the installers responsibility to make sure no unwanted situations can occur (e.g. too high water temperatures towards floor heating loops, etc.).
- It is the installers responsibility to make sure the water circuit is well balanced (e.g. when a domestic hot water request occurs, there will be sufficient flow towards other appliances as well, etc.)
- Daikin does not offer any temperature reducing device (TRD). This system only provides the possibility to use multiple set points.
- When space 0 is in thermo OFF, but space 1 or 2 are active, space 0 will be fed with water at a temperature equal to the highest set point of spaces 1 and 2.

  This can lead to unwanted heating of space 0.

## Field settings table

| First code | Second code | Setting name | Installer setting at variance with default value | | | | Default value | Range | Step | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Date | Value | Date | Value | | | | |
| 0 | **Remote control setup** | | | | | | | | | |
| | 00 | User permission level | | | | | 2 | 2~3 | 1 | — |
| | 01 | Room temperature compensation value | | | | | 0 | –5~5 | 0.5 | °C |
| | 03 | Status : space heating schedule timer mode | | | | | 1 (ON) | 0/1 | — | — |
| 1 | **Automatic storage timing for domestic water heating** | | | | | | | | | |
| | 00 | Status: night time storage | | | | | 1 (ON) | 0/1 | — | — |
| | 01 | Night time storage start time | | | | | 1:00 | 0:00~23:00 | 1:00 | hour |
| | 02 | Status: day time storage | | | | | 0 (OFF) | 0/1 | — | — |
| | 03 | Day time storage start time | | | | | 15:00 | 0:00~23:00 | 1:00 | hour |
| 2 | **Automatic setback function** | | | | | | | | | |
| | 00 | Status: setback operation | | | | | 1 (ON) | 0/1 | — | — |
| | 01 | Setback operation start time | | | | | 23:00 | 0:00~23:00 | 1:00 | hour |
| | 02 | Setback operation stop time | | | | | 5:00 | 0:00~23:00 | 1:00 | hour |
| 3 | **Weather dependent set point** | | | | | | | | | |
| | 00 | Low ambient temperature (Lo_A) | | | | | –10 | –20~5 | 1 | °C |
| | 01 | High ambient temperature (Hi_A) | | | | | 15 | 10~20 | 1 | °C |
| | 02 | Set point at low ambient temperature (Lo_Ti) | | | | | 70 | 25~80 | 1 | °C |
| | 03 | Set point at high ambient temperature (Hi_Ti) | | | | | 45 | 25~80 | 1 | °C |
| 4 | **Disinfection function** | | | | | | | | | |
| | 00 | Status: disinfection operation | | | | | 1 (ON) | 0/1 | — | — |
| | 01 | Disinfection operation day selection | | | | | Fri | Mon~Sun | — | — |
| | 02 | Disinfection operation start time | | | | | 23:00 | 0:00~23:00 | 1:00 | hour |
| 5 | **Automatic setback and disinfection set point** | | | | | | | | | |
| | 00 | Set point: disinfection operation temperature | | | | | 70 | 60~70 | 5 | °C |
| | 01 | Disinfection operation time duration | | | | | 10 | 5~60 | 5 | min |
| | 02 | Leaving water setback temperature | | | | | 5 | 0~10 | 1 | °C |
| | 03 | Room setback temperature | | | | | 18 | 17~23 | 1 | °C |
| 6 | **Option setup** | | | | | | | | | |
| | 00 | Domestic hot water tank installed | | | | | 0 (OFF) | 0/1 | — | — |
| | 01 | Optional room thermostat installed | | | | | 0 (OFF) | 0/1 | — | — |
| | 04 | Benefit kWh power supply mode | | | | | 0 | 0/2 | 1 | — |

| First code | Second code | Setting name | Installer setting at variance with default value | | | | Default value | Range | Step | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Date | Value | Date | Value | | | | |
| 7 | **Option setup** | | | | | | | | | |
| | 00 | Optional bottom plate heater installed | | | | | 0 (OFF) | 0/1 | — | — |
| | 02 | Multiple set point pattern | | | | | 0 (A) | 0/1 | — | — |
| | 03 | Multiple set point 1 | | | | | 0 (OFF) | 0/1 | — | — |
| | 04 | Multiple set point 2 | | | | | 0 (OFF) | 0/1 | — | — |
| 8 | **Option setup** | | | | | | | | | |
| | 00 | Remote controller temperature control | | | | | 1 (ON) | 0/1 | — | — |
| | 01 | Status: automatic restart function | | | | | 1 (ON) | 0/1 | — | — |
| | 03 | Status: low noise level | | | | | 1 | 1~3 | 1 | — |
| | 04 | Status: freeze up prevention | | | | | 0 | 0~2 | 1 | — |
| 9 | **Automatic temperature compensation** | | | | | | | | | |
| | 00 | Leaving water temperature compensation value | | | | | 0 | –5~5 | 0.5 | °C |
| | 01 | Domestic hot water tank compensation value | | | | | 0 | –5~5 | 0.5 | °C |
| | 02 | Thermo ON/OFF admission | | | | | 0 | –5~5 | 0.5 | °C |
| A | **Option setup** | | | | | | | | | |
| | 02 | Set point: required temperature difference for leaving and returning water | | | | | 10 | 5~15 | 1 | °C |
| | 03 | Set point: multiple set point 1 required temperature value | | | | | 35 | 25~80 | 1 | °C |
| | 04 | Set point: multiple set point 2 required temperature value | | | | | 65 | 25~80 | 1 | °C |
| b | **Domestic hot water set points** | | | | | | | | | |
| | 00 | Set point: reheat minimum temperature | | | | | 35 | 35~65 | 1 | °C |
| | 01 | Set point: reheat maximum temperature | | | | | 45 | 35~75 | 1 | °C |
| | 02 | Status: weather dependent domestic water heating | | | | | 1 (ON) | 0/1 | — | — |
| | 03 | Set point: storage temperature | | | | | 70 | 45~75 | 1 | °C |
| C | **Leaving water temperature limits** | | | | | | | | | |
| | 00 | Set point: leaving water maximum temperature | | | | | 80 | 37~80 | 1 | °C |
| | 01 | Set point: leaving water minimum temperature | | | | | 25 | 25~37 | 1 | °C |
| d | **Domestic water heating retention times** | | | | | | | | | |
| | 00 | Set point: minimum time for domestic water heating | | | | | 10 | 5~20 | 1 | — |
| | 01 | Set point: maximum time for domestic water heating | | | | | 30 | 10~60 | 5 | — |
| | 02 | Set point: interval minimum stop time of domestic water heating | | | | | 15 | 5~30 | 5 | — |
| E | **Service mode** | | | | | | | | | |
| | 00 | Vacuum mode | | | | | 0 | 0/1 | — | — |
| | 04 | Pump only operation | | | | | 0 | 0~2 | 1 | — |

# FINAL CHECK AND TEST RUN

## Final check

Before switching on the unit, read the following:

- When the complete installation and all necessary settings have been carried out, be sure that all panels of the unit are closed. Is this not the case, inserting your hand through the remaining openings can cause serious injury due to electrical and hot parts inside the unit.
- The service panel of the switch box may only be opened by a licensed electrician for maintenance purposes.

In order to purge most of the air out of the system perform a pump operation as described below:

1 Change field setting [E-04]

The default value is 0.

- When changing the setting to 1, the pump will operate at low speed (pump only, the unit will not operate).
- When changing the field setting to 2, the pump will operate at high speed.

2 When air purging is finished, change the field setting back to 0.

It is the responsibility of the installer to make sure that the air is purged out of the unit and system.

**NOTE** When using thermostatic radiator valves, make sure to open all valves during air purging operation.

## Test run

The installer is obliged to verify correct operation of the indoor and outdoor unit after installation. Therefor a test run must be performed according to the procedures described below. At any time it is possible to check correct operation of space heating and domestic water heating.

**NOTE** During the first start up of the unit (the first 48 hours of compressor running), it might happen that the noise level of the unit is higher than mentioned in the technical specifications. This is not an abnormal event.

### Temperature read-out mode

On the remote controller, the actual temperatures can be displayed.

1 Push and hold the button for 5 seconds.

The leaving water temperature is displayed (icons and and are blinking).

2 Use the and buttons to display:

- The entering water temperature (icons and are blinking and the icon is flashing slowly).
- The indoor temperature (icons and are blinking).
- The outdoor temperature (icons and are blinking).
- The hot water supply tank temperature (icons and are blinking).

3 Push the button again to leave this mode. If no button is pressed, the remote controller leaves the display mode after 10 seconds.

### Procedure for space heating

1 Check the leaving water and entering water temperature through the remote controller read-out mode and write down the displayed values. See "Temperature read-out mode" on page 30.

2 Push the button 4 times so the **TEST** icon will be displayed.

3 Perform the test as follows (when no action is performed, the user interface will return to normal mode after 10 seconds or by pressing the button once):

To test the space heating operation push the button to start the test run operation.

4 The test run operation will end automatically after 30 minutes or when reaching the set temperature. The test run operation can be stopped manually by pressing the button once. If there are misconnections or malfunctions, an error code will be displayed on the user interface. Otherwise, the user interface will return to normal operation.

5 To resolve the error codes, see "Error codes" on page 33.

6 Check the leaving water and entering water temperature through the remote controller read-out mode and compare them with the values noted with step 1. After 20 minutes of operation an increase of the values should confirm the space heating operation.

**NOTE** To display the last resolved error code, push the button 1 time. Push the button again 4 times to return to normal mode.

**NOTE** It is not possible to perform a test run if a forced operation from the outdoor unit is in progress. Should forced operation be started during a test run, the test run will be aborted.

### Procedure for domestic water heating

1 Check the domestic hot water tank temperature through the remote controller read-out mode. See "Temperature read-out mode" on page 30.

2 Push the button for 5 seconds.

The icon will start blinking with 1 second intervals.

3 Keep the unit operating for 20 minutes and check the domestic hot water tank temperature through the remote controller again.

An increase of the value with 5°C should confirm the domestic water heating operation.

4 The operation will stop if the tank storage temperature has been reached.

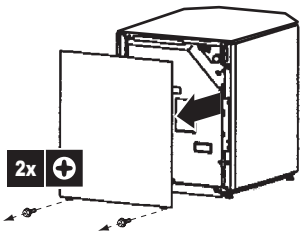
# MAINTENANCE AND SERVICE

In order to ensure optimal availability of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals.

This maintenance should be carried out by your local Daikin technician.

To execute the maintenance activities as mentioned below, it is only required to remove the front decoration panel.

To take away the front decoration panel, remove the 2 bottom screws and then unhitch the panel.




## Maintenance activities

**WARNING: ELECTRIC SHOCK**

- Before carrying out any maintenance or repair activity, always switch off the circuit breaker on the supply panel, remove the fuses or open the protection devices of the unit.
- Make sure that before starting any maintenance or repair activity, also the power supply to the outdoor unit is switched off.
- Do not touch live parts for 10 minutes after the power supply is turned off because of high voltage risk.
- Additionally, measure the points as shown in figure 5 with a tester and confirm that the voltage of the capacitor in the main circuit is no more than 50 V DC.
- The heater of the compressor may operate even in stop mode.
- Please note that some sections of the electric component box are hot.
- Make sure you do not touch a conductive section.
- Do not rinse the indoor unit. This may cause electric shocks or fire.

**Play it safe!**

Touch a metal part by hand (such as the stop valve) in order to eliminate static electricity and to protect the PCB before performing service.

The described checks must be executed at least **once a year** by qualified personnel.

**1** Water pressure relief valve

Check for correct operation of the pressure relief valve by turning the red knob on the valve counter-clockwise:

- If you do not hear a clacking sound, contact your local dealer.
- In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer.

**2** Pressure relief valve hose

Check that the pressure relief valve hose is positioned appropriately to drain the water.

**3** Indoor unit switch box

Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.

**4** Water pressure

Check if the water pressure is above 1 bar.

If necessary add water.

**5** Water filter

Clean the water filter.

# TROUBLESHOOTING

This section provides useful information for diagnosing and correcting certain troubles which may occur in the unit.

This troubleshooting and related corrective actions may only be carried out by your local Daikin technician.

## General guidelines

Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

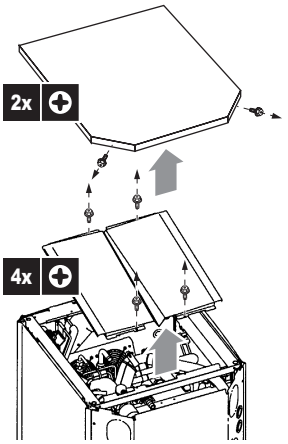
When carrying out an inspection on the switch box of the unit, always make sure that the main switch of the unit is switched off.

When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. Under no circumstances safety devices may be bridged or changed to a value other than the factory setting. If the cause of the problem can not be found, call your local dealer.

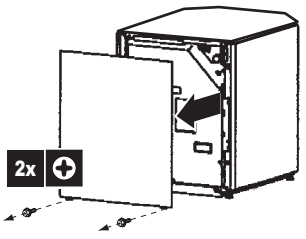
If the pressure relief valve is not working correctly and is to be replaced, always reconnect the flexible hose attached to the pressure relief valve, to avoid water dripping out of the unit!

## Opening the unit

- To facilitate access to the air purge valve, thermal cut-out, 3-way valve, thermistors, field wiring duct, ..., the top decoration panel of the unit can be removed by removing the 2 screws at the rear and then unhitch the panel.

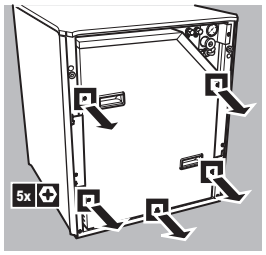



- In combination with removing the top decoration panel, the front decoration panel can also be removed to allow servicing the manometer, pressure relief valve, ... To remove the front decoration panel, remove the 2 bottom screws and then unhitch the panel.



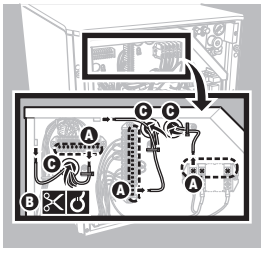
■ To gain access to the indoor unit at the front side, the total switch box can be removed from the unit.

**1** Remove the switch box cover by loosening the front screws and then unhitch the cover.

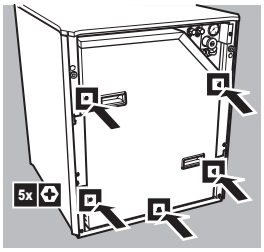



Switch off all power supply – also outdoor unit power supply, etc., ... – before removing the switch box service cover.

**2** Disconnect all field wiring.

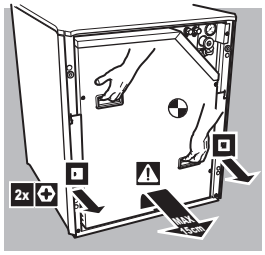


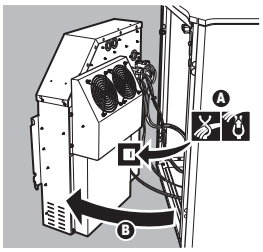

**3** Put back the switch box cover and fix it with the appropriate screws.




**4** Loosen the front screws and unhitch the total switch box.

The switch box can now be placed just before the indoor unit. The compressor cable located at the backside of the unit can be untied to place the switch box further away from the unit.




- Make sure to always fix the cover with the screws when removing the switch box.
- Parts inside the unit can be hot and burning is possible.
- Make sure to switch off all power supplies before removing the switch box from the unit.

## General symptoms

**Symptom 1: The unit is turned on ( LED is lit) but the unit is not heating as expected**

| POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|
| The temperature setting is not correct. | Check the controller set point. |
| The water flow is too low. | • Check that all shut-off valves of the water circuit are completely open.<br>• Check if the water filter needs cleaning.<br>• Make sure there is no air in the system (purge air).<br>• Check on the manometer that there is sufficient water pressure. The water pressure must be >0.3 bar (water is cold), >>0.3 bar (water is hot).<br>• Make sure that the expansion vessel is not broken. |
| The water volume in the installation is too low. | Make sure that the water volume in the installation is above the minimum required value (refer to "Checking the water volume and expansion vessel pre-pressure" on page 11). |
| Capacity shortage | Check if the cooling fans at the rear of the switch box are working properly. |

**Symptom 2: Pump is making noise (cavitation)**

| POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|
| There is air in the system. | Purge air. |
| Water pressure at pump inlet is too low. | • Check on the manometer that there is sufficient water pressure. The water pressure must be >0.3 bar (water is cold), >>0.3 bar (water is hot).<br>• Check that the manometer is not broken.<br>• Check that the expansion vessel is not broken.<br>• Check that the setting of the pre-pressure of the expansion vessel is correct (refer to "Setting the pre-pressure of the expansion vessel" on page 12). |

**Symptom 3: The water pressure relief valve opens**

| POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|
| The expansion vessel is broken. | Replace the expansion vessel. |
| The water volume in the installation is too high. | Make sure that the water volume in the installation is under the maximum allowed value (refer to "Checking the water volume and expansion vessel pre-pressure" on page 11). |

**Symptom 4: The water pressure relief valve leaks**

| POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|
| Dirt is blocking the water pressure relief valve outlet. | Check for correct operation of the pressure relief valve by turning the red knob on the valve counter clockwise:<br>• If you do not hear a clacking sound, contact your local dealer.<br>• In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer. |

**Symptom 5: The user interface displays "NOT AVAILABLE" when pressing certain buttons**

| POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|
| The current permission level is set to a level that prevents using the pressed button. | Change the "user permission level" field setting ([0-00], see "Field settings" in the operation manual. |

## Error codes

When a safety device is activated, the user interface LED will be flashing, and an error code will be displayed.

A list of all errors and corrective actions can be found in the table below.

Reset the safety by pushing the button.

In case this procedure for resetting the safety is not successful, contact your local dealer.

| Error code | Failure cause | Corrective action |
|---|---|---|
| A1 | Failure of writing memory (EEPROM error) | Contact your local dealer. |
| A6 | Malfunction of pump in water circuit (M1P) | • Make sure waterflow is possible (open all valves in the circuit).<br>• Force clean water through the unit. |
| A9 | R410A expansion valve error (K1E) | • Check wiring connections.<br>• Contact your local dealer. |
| AJ | Capacity error | Contact your local dealer. |
| C1 | Bad ACS communication | Contact your local dealer. |
| C4 | R410A liquid thermistor error (R3T) | • Check wiring connections.<br>• Contact your local dealer. |
| C5 | Domestic hot water tank thermistor error (R2T) | • Check wiring connections.<br>• Check if the domestic hot water option is turned active (refer to field setting [6-00].<br>• Contact your local dealer. |
| C9 | Returning water thermistor error (R4T) | • Check wiring connections.<br>• Contact your local dealer. |
| CA | Leaving water thermistor error (R5T) | • Check wiring connections.<br>• Contact your local dealer. |
| CJ | Remote controller thermostat thermistor error | Contact your local dealer. |
| E1 | Compressor PCB error | Contact your local dealer. |
| E3 | High pressure error (S1PH) | • Check wiring connections on outdoor unit and indoor unit.<br>• Make sure the circuit is filled with water (no air inside)<br>• Make sure the domestic hot water tank is filled with water.<br>• Make sure water flow is possible (open all valves in the circuit).<br>• Make sure the water filter is not blocked.<br>• Make sure all refrigerant stop valves are open.<br>• Contact your local dealer. |
| E3 | Thermal cut-out error (Q2L) | • Reset the thermal cut-out.<br>• Contact your local dealer. |
| E4 | Low pressure error (B1PL) | • Check wiring connections on outdoor unit and indoor unit.<br>• Contact your local dealer. |
| E5 | Overload activation of compressor (M1C) | Contact your local dealer. |
| E9 | R134a expansion valve error (K2E) | • Check wiring connections.<br>• Contact your local dealer. |
| F3 | Discharge temperature error | Contact your local dealer. |
| J3 | Discharge thermistor error (R6T) | • Check wiring connections.<br>• Contact your local dealer. |
| J5 | R134a liquid thermistor error | • Check wiring connections.<br>• Contact your local dealer. |
| JA | R134a high pressure sensor error (B1PH) | • Check wiring connections.<br>• Contact your local dealer. |
| JC | R134a low pressure sensor error (B1PL) | • Check wiring connections.<br>• Contact your local dealer. |
| L1 | Compressor inverter PCB error | Contact your local dealer. |
| L4 | Fin thermistor error | • Check wiring connections.<br>• Contact your local dealer. |
| L5 | Compressor inverter PCB error | Contact your local dealer. |
| L8 | Compressor inverter PCB error | Contact your local dealer. |
| L9 | Compressor inverter PCB error | Contact your local dealer. |
| LC | Inverter communication problem | Contact your local dealer. |
| LH | Converter error | Contact your local dealer. |
| P1 | Main compressor PCB error | Contact your local dealer. |
| PJ | Bad combination inverter components | Contact your local dealer. |
| U2 | Power supply error | • Check wiring connections.<br>• Contact your local dealer. |
| U4 | QA transmission problem | Contact your local dealer. |
| U5 | Remote controller error | Contact your local dealer. |
| UA | Type connection problem | • Wait till initialisation between outdoor unit and indoor unit is finished (after power ON, wait at least 12 minutes).<br>• Contact your local dealer. |
| UC | Address duplication error | Contact your local dealer. |
| UF | Transmission problem with outdoor unit | Contact your local dealer. |
| UF | QA wiring problem | Contact your local dealer. |
| UH | Address error | Contact your local dealer. |

## Technical specifications

| | | 011 | | 014 | | 016 | |
|---|---|---|---|---|---|---|---|
| | | V1 | Y1 | V1 | Y1 | V1 | Y1 |
| **Nominal capacity** | (kW) | 11.2 | 11.2 | 14 | 14 | 16 | 16 |
| **Casing material** | | Pre-coated sheet metal | | Pre-coated sheet metal | | Pre-coated sheet metal | |
| **Dimensions H x W x D** | (mm) | 705 x 600 x 695 | | 705 x 600 x 695 | | 705 x 600 x 695 | |
| **Weight** | | | | | | | |
| • with packaging | (kg) | 153 | 156 | 153 | 156 | 153 | 156 |
| • without packaging | (kg) | 144 | 147 | 144 | 147 | 144 | 147 |
| **Connections** | | | | | | | |
| • water inlet/outlet | | G 1"1/4 (female) | G 1"1/4 (female) | G 1"1/4 (female) | G 1"1/4 (female) | G 1"1/4 (female) | G 1"1/4 (female) |
| • water drain | | drain valve | drain valve | drain valve | drain valve | drain valve | drain valve |
| • water shut-off valve material | | Brass-CW 617N | Brass-CW 617N | Brass-CW 617N | Brass-CW 617N | Brass-CW 617N | Brass-CW 617N |
| • refrigerant liquid side | (mm) | Ø9.5 (3/8 inch) | Ø9.5 (3/8 inch) | Ø9.5 (3/8 inch) | Ø9.5 (3/8 inch) | Ø9.5 (3/8 inch) | Ø9.5 (3/8 inch) |
| • refrigerant gas side | (mm) | Ø15.9 (5/8 inch) | Ø15.9 (5/8 inch) | Ø15.9 (5/8 inch) | Ø15.9 (5/8 inch) | Ø15.9 (5/8 inch) | Ø15.9 (5/8 inch) |
| **Expansion vessel** | | | | | | | |
| • volume | (l) | 12 | 12 | 12 | 12 | 12 | 12 |
| • maximum working pressure (MWP) | (bar) | 4 | 4 | 4 | 4 | 4 | 4 |
| **Pump** | | | | | | | |
| • type | | DC motor | DC motor | DC motor | DC motor | DC motor | DC motor |
| • no. of speed | | inverter controlled | inverter controlled | inverter controlled | inverter controlled | inverter controlled | inverter controlled |
| **Sound pressure level**[(a)] | (dBA) | 42 dBA | 42 dBA | 44 dBA | 42 dBA | 42 dBA | 42 dBA |
| **Internal water volume** | (l) | 20 | 20 | 20 | 20 | 20 | 20 |
| **Pressure relief valve water circuit** | (bar) | 3 | 3 | 3 | 3 | 3 | 3 |
| **Operation range - water side** | (°C) | 25~80 | 25~80 | 25~80 | 25~80 | 25~80 | 25~80 |
| **Operation range - outdoor** | | | | | | | |
| • space heating | (°C) | –20~+20 | –20~+20 | –20~+20 | –20~+20 | –20~+20 | –20~+20 |
| • domestic hot water | (°C) | –20~+35 | –20~+35 | –20~+35 | –20~+35 | –20~+35 | –20~+35 |

(a) At 1 m in front of the unit (free field condition) at nominal values: ambient temperaure of 7°C/6°C and heating set point 65°C/75°C.

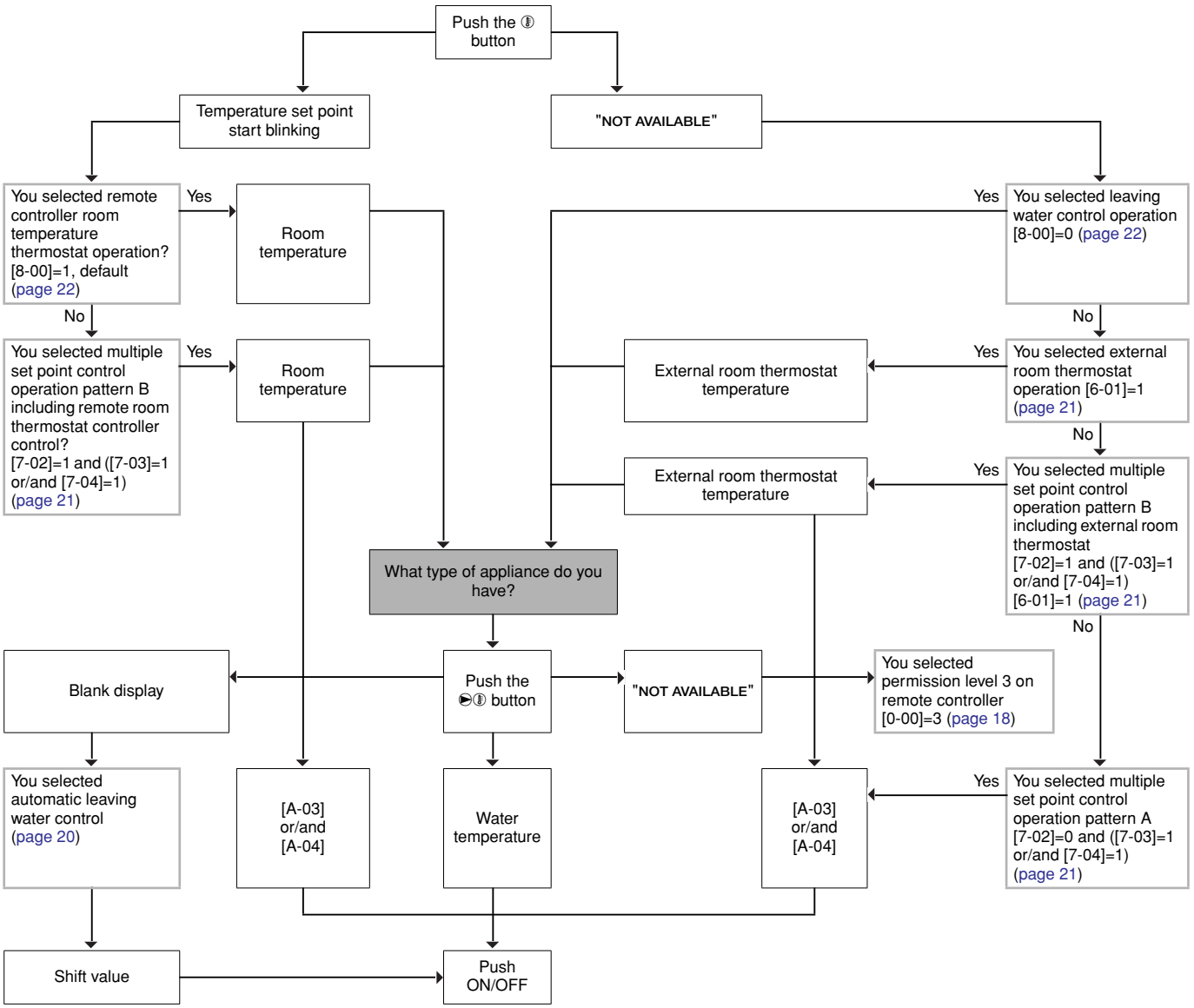
## Electrical specifications

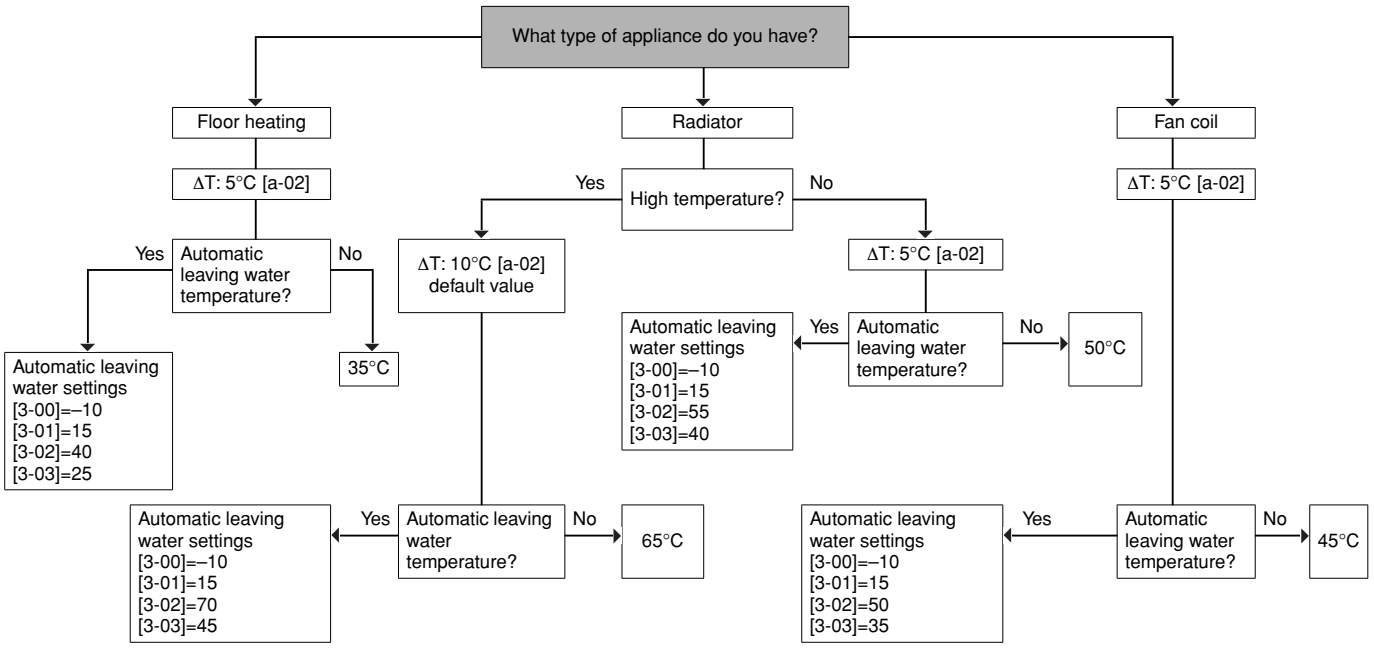
| | | 011 | | 014 | | 016 | |
|---|---|---|---|---|---|---|---|
| | | V1 | Y1 | V1 | Y1 | V1 | Y1 |
| **Phase** | | 1N~ | 3N~ | 1N~ | 3N~ | 1N~ | 3N~ |
| **Frequency** | (Hz) | 50 | 50 | 50 | 50 | 50 | 50 |
| **Voltage range** | | | | | | | |
| • minimum | (V) | 220 | 380 | 220 | 380 | 220 | 380 |
| • maximum | (V) | 240 | 415 | 240 | 415 | 240 | 415 |
| **Voltage tolerance** | | –10%/+6% | –10%/+6% | –10%/+6% | –10%/+6% | –10%/+6% | –10%/+6% |
| **Maximum running current** | (A) | 21.7 | 12.5 | 21.7 | 12.5 | 21.7 | 12.5 |
| **Recommended field fuse** | (A) | 32 | 20 | 32 | 20 | 32 | 20 |

# ANNEX

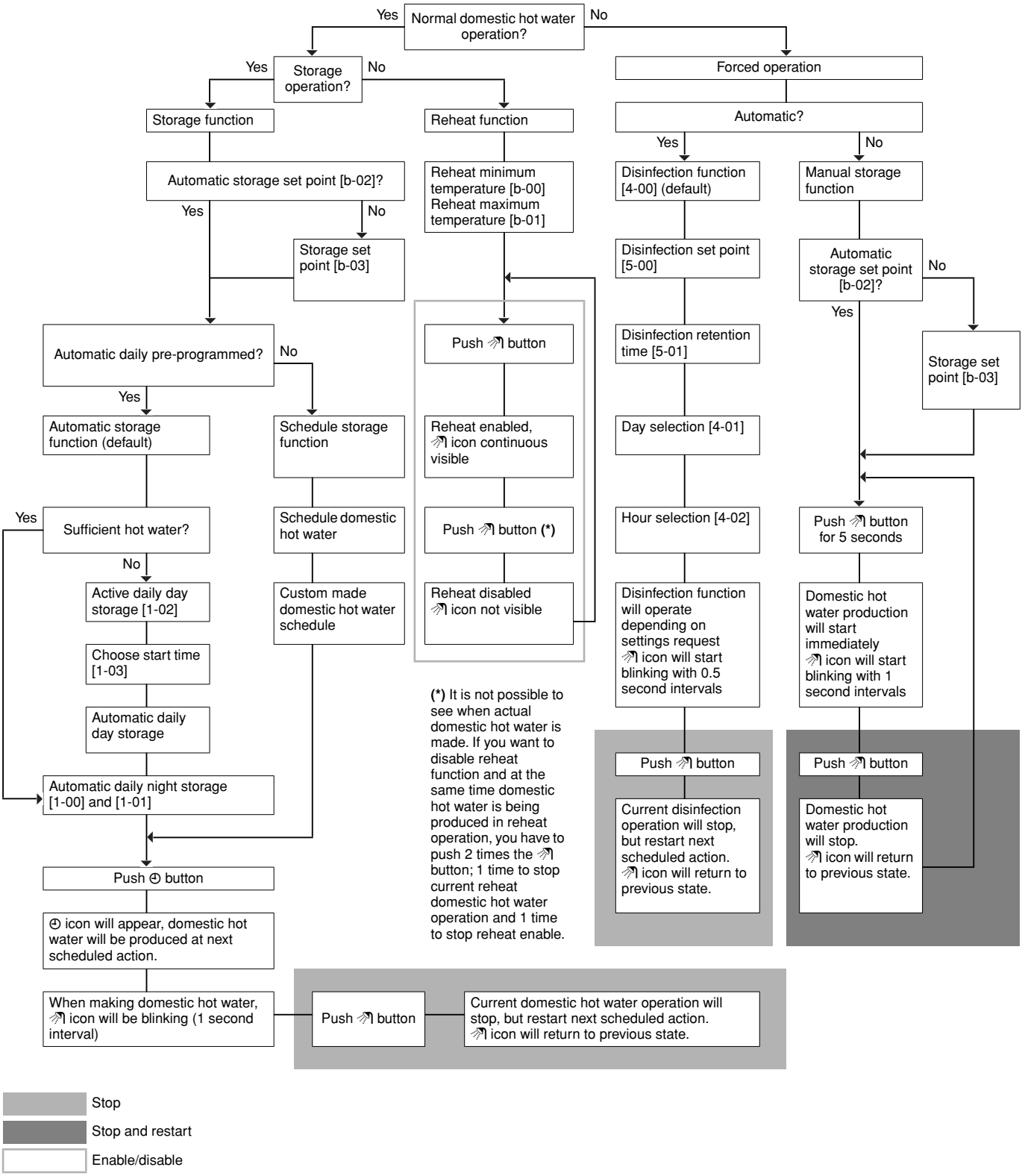
## General overview and guide to start up the unit

### Space heating

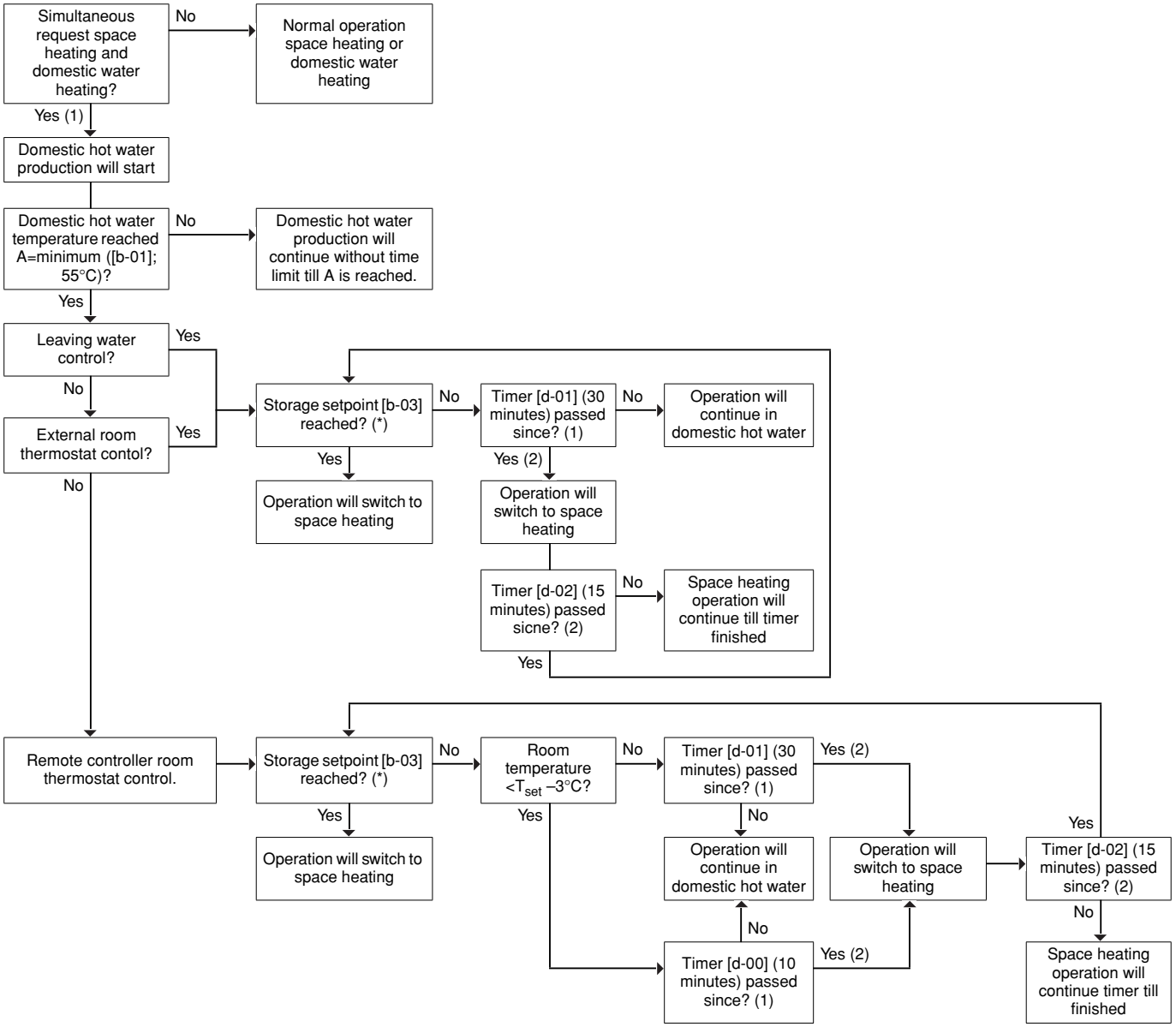

Push the ⏻ button
Temperature set point start blinking
"NOT AVAILABLE"
You selected remote controller room temperature thermostat operation? [8-00]=1, default (page 22)
Yes
Room temperature
No
You selected multiple set point control operation pattern B including remote room thermostat controller control? [7-02]=1 and ([7-03]=1 or/and [7-04]=1) (page 21)
Yes
Room temperature
Yes
You selected leaving water control operation [8-00]=0 (page 22)
No
Yes
You selected external room thermostat operation [6-01]=1 (page 21)
External room thermostat temperature
No
Yes
You selected multiple set point control operation pattern B including external room thermostat [7-02]=1 and ([7-03]=1 or/and [7-04]=1) [6-01]=1 (page 21)
External room thermostat temperature
No
What type of appliance do you have?
Blank display
Push the ⏩⏻ button
"NOT AVAILABLE"
You selected permission level 3 on remote controller [0-00]=3 (page 18)
You selected automatic leaving water control (page 20)
[A-03] or/and [A-04]
Water temperature
[A-03] or/and [A-04]
Yes
You selected multiple set point control operation pattern A [7-02]=0 and ([7-03]=1 or/and [7-04]=1) (page 21)
Shift value
Push ON/OFF



**Domestic water heating**


Normal domestic hot water operation?
Yes
No
Storage operation?
Yes
No
Storage function
Reheat function
Forced operation
Automatic?
Yes
No
Automatic storage set point [b-02]?
Yes
No
Storage set point [b-03]
Reheat minimum temperature [b-00]
Reheat maximum temperature [b-01]
Disinfection function [4-00] (default)
Disinfection set point [5-00]
Disinfection retention time [5-01]
Day selection [4-01]
Hour selection [4-02]
Disinfection function will operate depending on settings request
icon will start blinking with 0.5 second intervals
Manual storage function
Automatic storage set point [b-02]?
Yes
No
Storage set point [b-03]
Push button for 5 seconds
Domestic hot water production will start immediately
icon will start blinking with 1 second intervals
Automatic daily pre-programmed?
Yes
No
Automatic storage function (default)
Schedule storage function
Schedule domestic hot water
Custom made domestic hot water schedule
Sufficient hot water?
Yes
No
Active daily day storage [1-02]
Choose start time [1-03]
Automatic daily day storage
Automatic daily night storage [1-00] and [1-01]
Push button
Reheat enabled, icon continuous visible
Push button (*)
Reheat disabled icon not visible
(*) It is not possible to see when actual domestic hot water is made. If you want to disable reheat function and at the same time domestic hot water is being produced in reheat operation, you have to push 2 times the button; 1 time to stop current reheat domestic hot water operation and 1 time to stop reheat enable.
Push button
Current disinfection operation will stop, but restart next scheduled action.
icon will return to previous state.
Push button
Domestic hot water production will stop.
icon will return to previous state.
Push ⏲ button
⏲ icon will appear, domestic hot water will be produced at next scheduled action.
When making domestic hot water, icon will be blinking (1 second interval)
Push button
Current domestic hot water operation will stop, but restart next scheduled action.
icon will return to previous state.
Stop
Stop and restart
Enable/disable

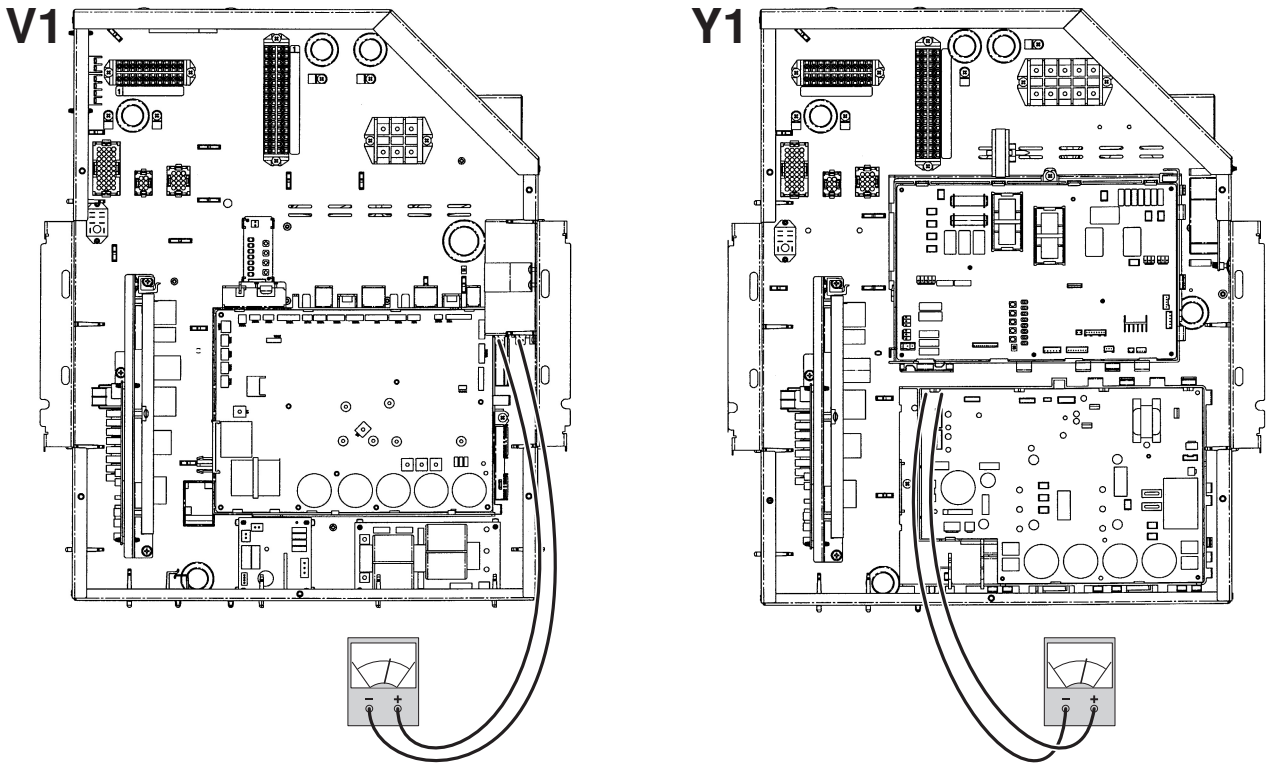
## Simultaneous demand of space heating and domestic water heating




(1) are in relation with each other

(2) are in relation with each other

(*) Storage set point can be automatic value if [b-02]=1

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## NOTES

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